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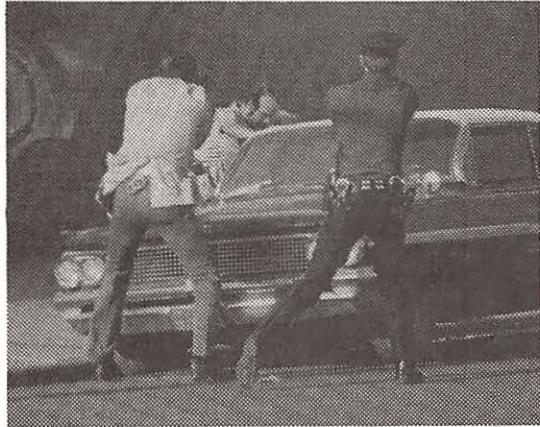
MONITORING TIMES

February 1991

Tahiti: Myth and Reality

by Edward Pyatt

One doesn't generally travel to Tahiti to listen to the radio, so it wasn't until Ed Pyatt's seventh visit that he looked up RFO Radio Tahiti. Unlike most government-owned voices, this shortwave station doesn't represent Tahiti to the world, but is an arm of Radio France International in Paris. That makes for an unusual programming mix, but perhaps you can still catch the balmy breezes on a frosty northern night.



Henry Ortega

6



DRUG WAR Monitoring

by William Shelby

10

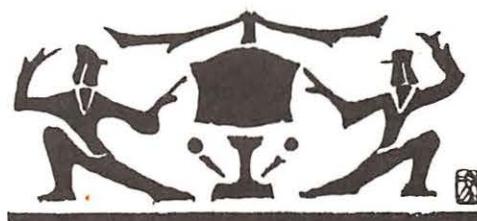
Next to monitoring a natural or man-made disaster, overhearing drug deals and drug busts ranks as the most excitement a radio monitor can expect. But William Shelby has avoided the media's temptation to capitalize on the sensational. His coverage of the U.S. Customs Service is thorough and professional. So thorough, in fact, that his report will be presented in two parts, concluding next month. This is "must" reading for utility buffs!

China's Shortwave Voices

by Charles Sorrell

16

Nowhere has shortwave radio proved its worth more than in China -- a huge nation with many far-flung and isolated states. Several broadcasting services are there to be heard. Although DXing China can be both rewarding and frustrating, Sorrell's overview will help you know what to expect. You can certainly anticipate hearing more than Radio Beijing!



COVER: Fire engulfs the jet-fuel tanks at Denver's Stapleton Airport. Photo by Jim Nelson.

No-Code Hamming is Here!

20

At last, anyone who can demonstrate technical competence can obtain a ham license -- without having to learn Morse code! Noted writer and ham Fred Maia, W5YI, recounts the struggles within the U.S. ham community as it, and the FCC, searched for the proper direction for amateur radio and its assigned frequencies. The result: Now it's even easier for you to be a part of amateur radio's future!

Fire! at Stapleton Int'l Airport

24

Wayne Heinen counts himself fortunate to have monitored from the safety of his home the worst fire the airport outside Denver, Colorado, had ever experienced. As a tank of jet fuel burned out of control and threatened numerous other nearby tanks, the fire department desperately searched the state for more foam for containment. Through three days, as a black cloud hung over the city, Wayne heard it all.



And More...

One of the most common requests from our readers is to have some of the jargon of the hobby explained. "Uncle Skip" did that for radio hobbyists in July and August 1990, and Jean Baker begins a glossary this month for aero monitors (p. 44).

Our reviewers have put a couple of new, moderately priced receivers on the test bench: Larry Magne gives a qualified thumbs-up to Haverhill's new digital portable, while Bob Grove is more enthusiastic about Uniden's BC855XLT desktop scanner.

Leafing through the back section of *MT*, which project would you want to start first? -- Doug DeMaw, Rich Arland, Clem Small, and Bob Grove present so many projects and tips this month, we can't list them all! Same goes for the frequencies covered in this issue ... It may take you until the March issue to savor all that is contained in February's!

When you look at the page with your label on it, though, take a moment to check your expiration date. Subscription rates will be slightly higher beginning March 1, so why not take the time to renew right now?

DEPARTMENTS

Letters	3	American Bandscan	52
Communications	4	Outer Limits	54
Shortwave Broadcasting	26	Below 500 kHz	56
Utility World	30	Shortwave Guide	58
The Scanning Report	34	Magne Tests ...	88
What's New?	38	Scanner Equipment	90
The Beginner's Corner	40	DeMaw's Workbench	92
The Federal File	42	Experimenter's Workshop	94
Plane Talk	44	Antenna Topics	96
On the Ham Bands	46	Ask Bob	98
The QSL Report	48	Convention Calendar	101
Reading RTTY	49	Stock Exchange	102
Satellite TV	50		

MONITORING TIMES

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LETTERS

"I'm writing because I'm confused," says Bruce Gaskamp of Brenham, Texas. "I tuned in to one of the loggings listed on page 27 of last month's issue and didn't hear a thing. Is it possible to hear these programs or are they just past loggings from someone else's log?"

Bruce, the answer is yes and yes. The loggings section is a selection of things that *have been heard* by *Monitoring Times* readers around the world.

Now for your first question: "Is it possible to hear these programs?" Yes, it is possible, and under most circumstances, even probable. However, there are never guarantees with shortwave. Let me explain.

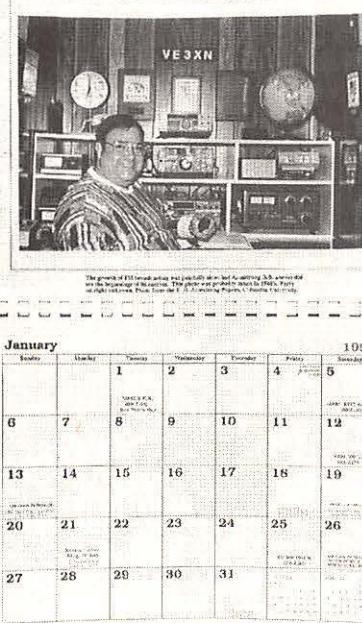
While there are shortwave stations with transmitters so close or so strong as to virtually guarantee regular reception, these are not in the majority. Because the more powerful stations are easily found by simply spinning around the dial, they are not often listed in the loggings column. What you see in the logging section is a variety of things, some quite exotic. Of course, reception conditions also play a part in what you'll hear, varying the stations that reach your receiver by day, month and even year.

One final comment. Remember that when someone tunes in a really exotic station, it is the result of a number of factors all coming together at the same time: the operator's skill, sometimes equipment, a healthy dose of luck and generally, a lot of time.

Granted the article was about an AM DXer, but re-read the profile of Patrick Martin on page 21 of the December 1990 issue. Says Patrick, "I'd still like to hear India. I've been sitting on 1134 kHz...*for years and years* [italics mine]." Not every rare DX catch is the result of monk-like patience. But few happen on the first time out.

Keep listening, Bruce!

We got a real nice 1991 Ham Photo Calendar from John David of KB1T Radio Specialties. If you're into ham radio -- as a participant, monitor or hopeful, you'll love the photographs. My favorite is March which shows Trevor Rogers, VK5FG, operating from John Willis Island -- a bleak



looking slice of rock jutting out of the Coral Sea. The rest span the globe from the Antarctic to Bhutan (isn't that a lighter?) and the U.S.S.R.

The 1991 edition is John's first all-color edition and it's available for \$11.95 plus 2.00 postage from KB1T Radio Specialties, Box 1015YG, Amherst, New Hampshire 03031.

John Flake of Charlotte, North Carolina, figures that he "blew somebody's mind" when he completed a week-long radio survey. John, a big shortwave listener, didn't fill out the survey with the names of local stations. "Wait until they try and figure out KUSW, WRNO, ABC-Perth, WWCR, KTWR, CFRB, WHRI and such."

I'm not sure how that will be handled statistically, John. Unless someone at the research company is familiar with shortwave, they may simply dismiss it a gobbledegook and throw out the data.

Some years ago, Joe Costello, owner of WRNO Worldwide, told me that his shortwave station was starting to show up on Arbitron diaries (surveys). WRNO got included in the survey because his FM station is also called WRNO and the people taking the survey looked up the call letters in

[Please turn to p. 100]



MONITORING THE IRAQ/KUWAIT CONFLICT

by Langley Pierce
New 2nd Edition

If you want to hear the inflight conversations between the fighters in the Gulf, or the ship to shore calls, or the US Navy then *Monitoring the Iraq/Kuwait Conflict* is a must.

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COMMUNICATIONS

Albanian Journalists Sorry

A litany of apologies continues to pour from Soviet-bloc journalists as their countries fall to the west. Albania, one of the last hold-outs in the camp of Stalinist admirers, is apparently in the death-throes of democratic reform -- just listen to Radio Tirana.

The station, which only a few years ago programmed little more than constant paeans to President Enver Hoxa, is now admitting -- and describing -- the acts of violence occurring in cities like Shkoder and Elbasan. Last month, broadcasters on the station even gave their own personal opinions on the events.

Not too long ago, the very admission that something was wrong in the worker's paradise might have earned a journalist a trip to jail or a bullet in the back of the head.

One recent broadcast from Tirana closed with what has become a routine apology, having been heard from stations in Rumania, Czechoslovakia, and most pathetically, East Germany. Said the Albanian broadcaster: "I would like to take advantage of this occasion to thank all listeners for the support they gave us, the journalists of Radio Tirana. We can make them one firm promise -- that there will be far more information in our broadcasts than there has been in the past."

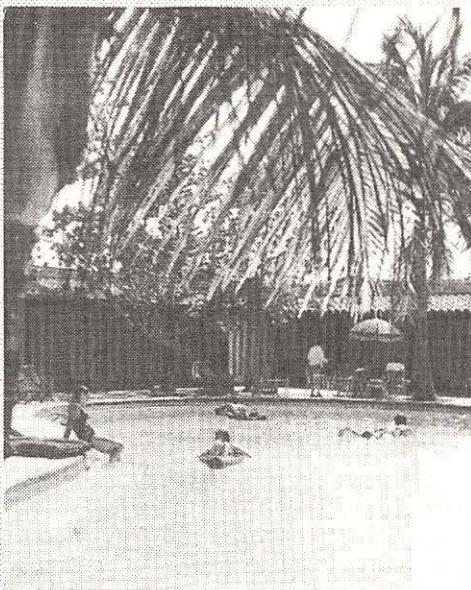
Hallelujah.

Tune In Top Cities

Government-sponsored shortwave stations tend to "accentuate the positive" about their country. That's somewhat understandable since it's the job of most shortwave stations to project a favorable image of their country abroad.

Now comes a more reliable rendering of "livable" cities from the private non-profit Population Crisis Committee in Washington, D.C. PCC ranks metropolitan cities around the world on the basis of food expenditures, living space, access to utilities, communications, education, infant mortality, murder rate, air quality, noise pollution, and traffic congestion.

The top five most livable cities are Melbourne, Montreal, Seattle-Tacoma, Atlanta, and Essen-Dortmund-Duisburg in Germany.



It may sound like a tropical paradise ... but a nice place to live? Not necessarily.

The five least livable cities as ranked by PCC are Lagos, Nigeria; Kinshasa, Zaire; Kanpur, India; Dhaka, Bangladesh; and Recife, Brazil.

So the next time you are able to cut through the static enough to hear a glowing report on beautiful and healthful Lagos from the Voice of Nigeria, don't you believe it!

The Burper

Police communications in Pennsylvania's Mon Valley (near Pittsburgh) have been plagued by annoying sounds ranging from belching, loud clicking, kazoo serenades and what police discretely call "body sounds."

The sounds have blared over the Twin River Council of Governments police radio frequencies for the last year, sometimes interrupting important transmissions.

"At first it was kind of funny," said Lincoln Police Chief Ted Hazard. "Then as it progressed it became a bit of a nuisance."

McKeesport police say that they are close to solving the problem, however. Chief Daniel Kochman says that he thinks the culprit is another police officer because of the times that the Burper is on the air and the strength of the signal. "I'm convinced that the transmission is coming from a police car," he says.

Others disagree. According to Gertrude Anderson, a public affairs specialist with the FCC in Philadelphia, "sometimes [used] police cars are sold with the radio still in, which is not a great idea."

Still, dispatchers in the area are keeping track of the dates and times of the intrusions and hope to match them with officers' work schedules.

"We'll find The Burper by process of elimination," promises Chief Kochman.

Notices to Fishermen

Shortwave listeners from the Gulf of Maine to Cape Hatteras and possibly beyond, will be able to tune up-to-date information on fishing conditions on shortwave. According to local reports, NOAA's National Marine Fisheries Service station, KMY, will provide time-critical fishery notice, notices of regulatory actions, and future hearings and meetings of interest to the fishing industry.

Broadcasts will occur twice a week -- Tuesdays at 8:30 am on 6521.9 kHz (repeated at 8:35 am on 8294.2 kHz) and again on Thursdays at 2:30 pm on 6521.9 (repeated at 2:35 pm on 8294.2 kHz).

Announcements of other broadcasts will be made on weekdays on 2182 kHz at 8:00 am. Fishermen will then be instructed to turn to a working frequency where the broadcast can be heard. All transmissions will be in single sideband.



NOAA

CPBS Celebrates 50th

China's national radio network, the Central People's Broadcasting Station

COMMUNICATIONS

(CPBS) celebrates its 50th anniversary this month and, according to the government-sponsored media, is gaining in popularity. "One out of every two Chinese tunes to the news service of the Central People's Broadcasting Station at 6:30 am [2230 UTC] or 8:00 pm [1200 UTC]."

CPBS began its life half a century ago, broadcasting a daily one hour program from a cave in Yan'an. Today it provides six channels of news, music and information for 107 hours a day (plus 37 hours of programs beamed to Taiwan).

Despite its growth, CPBS reportedly has found itself in a battle for listeners, many of whom have been drawn away from the radio by television soap operas.

Sources from the radio station promise to combat its one-eyed competitor by modernizing the station, updating the news, and making the programs "closer to life."

Listeners in North America can tune in CPBS broadcasts on their shortwave radios. According to *Passport to World Band Radio*, reception is best in the early morning hours (after 0700 UTC) and, during the winter, in mid afternoon (starting from 1800 to 2000 UTC) on a number of frequencies. These include 7504, 7516, 7525, 7620, 7770, 8007, 9020, 9080, 9390, 9455, 9775, 10010, 11000, 11040, 11100, 11330, 11505, 11610, 12120, 15030, 15390, 15500, and 17700 kHz.

NICADS: Exploding the Memory Myth

For decades, manufacturers and end users of NiCd batteries have apparently labored under a misconception: that a NiCd cell "remembers" the amount of discharge when it is recharged and gives up only that amount even when called on to deliver its full capacity.

According to Bruce Essig of Gates Energy Products in Gainesville, Florida, recent tests show that the phenomenon is virtually non-existent.

Gates, which manufactures 80 percent of the batteries used by satellite missions, tested cells from two manufacturers. Both were cycled, first at zero discharge, then at 25% discharge, and finally at complete discharge. After

nearly 500 cycles, no significant difference was noted in rechargeability among the samples.

In fact, those that were totally discharged (to 1 volt per cell), as well as those that were continuously overcharged, actually showed slightly greater capacity than those charged by normal standards.

A typical NiCd battery is useful for at least 500 full charge/discharge cycles over a period of several years. Appliances which remain plugged into their chargers unused for periods of 50 days or more experience a 0.15 volt depression when finally used, giving the impression of a partial discharge. Actually, after they are fully discharged to 1 volt per cell, they bounce back to their rated capacity upon recharge.

Apparently, the misconception regarding these batteries was based on a one isolated observation of a single battery in a lunar NASA mission.

Daily DAB'll Do It!

Digital audio broadcasting is a reality. A Japanese radio station has begun daily programming, delivered by satellite, that sounds as good as a compact disk. Annoying multipath and fading, common to FM broadcasts, is nonexistent with DAB and listeners with digital audio tape recorders can make recordings that are virtually identical to the master tapes.

Starting in April, the service will expand to 24 hour a day operation and begin to scramble their transmissions. A decoder/receiver is necessary to receive the broadcasts and a monthly \$4.60 subscription fee will keep the music coming to your home without interruption. The Satellite Digital Audio Broadcasting Company of Tokyo hopes to have 700,000 paying customers within their first two years.

MT Postal (and Subscription) Rates Rise

Grove Enterprises, publisher of *Monitoring Times*, regrets it must raise the annual subscription rate for the first time since June of 1988. Increases in the postal rate make it necessary to raise the annual subscription rate to \$19.50 for one year, \$37 for two years, and \$54 for three. Foreign subscriptions will also increase to \$28, \$54 and \$78 for one, two and three years.

Subscriptions may be extended at the old rates until the end of February, so you'd better send in your renewal now!

Thanks and credits to the Anonymous, Grand Rapids, Michigan; BBC Monitoring Service, The Christian Science *World Monitor*, Frank DeMino, Pittsburgh, Pennsylvania; H.G. Enquist, Redbridge, Ontario; Larry Fowler, Monument Beach, Massachusetts; *Passport to World Band Radio*, Edward Westlake, Lake Orion, Michigan.

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RADIO TAHITI

Myth and Reality in the South Pacific



by Edward J. Pyatt

Although I've visited the island of Tahiti on at least six occasions, I must confess that I have never taken the time to look for Radio Tahiti. Although such an admission may seem heretical to the serious radio hobbyist, the station just wasn't on my mind.

Instead, my trips to Tahiti have been consumed with a passion for relaxing in the beautiful lagoon surrounding the island, for automobile trips through the scenic hills overlooking the city of Papeete, and for camping excursions to the picture book beauty of the neighboring island of Moorea.

I have acquired many Tahitian friends during my visits, developing deep affections for the Taputaurai family of Mahina (a community near Papeete). They have tutored me in the French language, provided me with a knowledge of and an appreciation for Tahitian culture, and have taken me with them on numerous family excursions. The meals taken at their table have been sumptuous.

So overwhelming is this place that despite my xxxx years as a shortwave listener, it wasn't until my most recent visit that I sought out the station -- officially known as "Radio Television Francaise D'outre Mer (RFO). It is the government funded radio and television voice of French Polynesia.

The Real Tahiti

Tahiti is an island that has been associated with great natural beauty and with countless legends of romance and adventure. Often it is

difficult to determine where myth ends and reality begins. It is without a doubt an island of great natural beauty. It is surrounded by a spectacular reef and the clear blue waters of the Pacific. However, there are no really spectacular white sand beaches on Tahiti.

The population includes Polynesians, French, Chinese, and others and various mixtures of all. It is an island of a newly renovated two-story traditional open market and of modern air conditioned shopping centers.

This is also an expensive island. A pair of mostly polyester men's trousers sells for U.S. \$75. A hamburger at the fast food place can cost U.S. \$5. Those who come to the island for fun and adventure typically bring plenty of money. Papeete harbor is always full of yachts and schooners from Sweden, France, Switzerland, Finland, Canada, the USA, New Zealand, Australia, and the like. Expensive clothing boutiques abound.

Many also have a vision of Tahiti as a hedonist's paradise. In truth, Tahitians are a religious people who take church going very seriously. The churches are full on Sunday mornings with many of them holding two services -- one in the French language and one in the Tahitian language. The Tahitian language services usually last a good deal longer than the French ones.

Recent years have witnessed a resurgence of Polynesian culture and an emphasis on things Polynesian. The July 14 celebrations have lost most of their French Bastille Day emphasis and become more of a celebration of Polynesian art, dance, and sports. The

recently constructed \$20 million town hall in Papeete has an architectural facade that replicates the facade of the palace of Tahiti's last king. A memorial project that will trace the history of the royal family in Tahiti has been authorized.

The RFO Studio

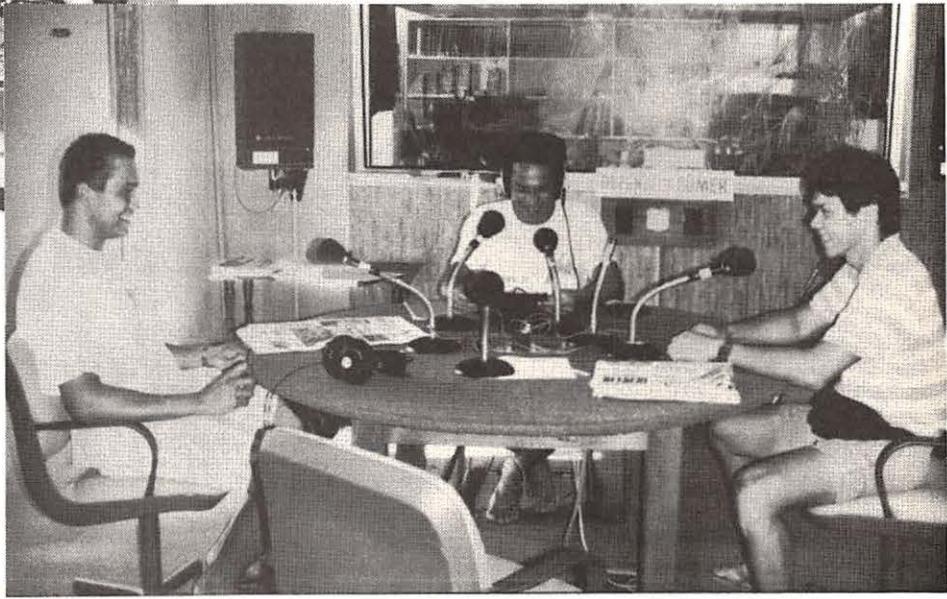
The Radio Tahiti management had been informed prior to my arrival of my desire to visit their studio. French is the language of government in Tahiti. My French is not so robust, hence I felt duty bound to take an interpreter with me on my visit to the studio. My Tahitian friend, Didier Taputuarai, served ably as interpreter and guide. A telephone call to Mr. M. Soulimovsky, the technical director of Radio Tahiti, confirmed our visit and we were on our way.

Traffic in the city of Papeete is, to say the least, a serious problem. The crush of cars is incredible for such a small island. Most of the commercial activity is in Papeete so people drive into the city in the morning and then drive home for lunch and then drive home again in the evening. This creates three periods of traffic chaos daily. You literally take your life onto your feet when you venture to cross a street in Papeete. People drive French style -- with a reckless abandon and a love for speed.

Didier and I safely negotiate the mid-morning traffic and find a parking space near the station. The Radio Tahiti studio is located in a small, unpretentious building on a back street. We enter and are greeted by a male



Paris, not Papeete, calls the tune at RFO.
Left: Studio personnel edit a program;
Below left, Bernard Ferbos, Assistant
Director of Programs; Below, the making of
a Radio Tahiti program.



receptionist who announces our arrival to Mr. Soulimovsky. It is immediately obvious that the building is too small for the activities that take place there. Three narrow hallways seem to converge at the area near the reception desk. People turn sideways in order to squeeze past one another!

Mr. Soulimovsky arrives and greets us warmly with a few pleasantries in French. I respond in French. After exchanging greetings, it becomes clear that his command of English is as weak as my command of French. He then introduces me to Mr. Leon Siquin, the principal technical specialist, who speaks fluent English and is to be the host for my visit.

Thanks to Mr. Siquin I received a wealth of information about the technical side of operations, and met several other people who provided information about programming. He also made arrangements for me to visit the shortwave and mediumwave transmitter site in Mahina.

Radio Tahiti Programming

North American listeners probably have erroneous ideas about the nature of Radio Tahiti programming. In North America we usually hear only the evening programs of Radio Tahiti. A conversation with Bernard Ferbos, the assistant director of programs, revealed that only the night programs have a real Tahitian flavor. Each week night from 7 p.m. local time until sign off there is a program called "Te Maru a'o Nui" hosted by

the Mario brothers. During the program, Tahitians call in with musical requests, birthday and anniversary greetings and other messages for persons on Tahiti and the outer islands. The callers usually converse in Tahitian and request a selection of Tahitian music. On weekends the programs "Te Vevo" with Augustine Drollet and "Te Eo Kanahau no Te Henua Enata" with J.M. Barsinas are heard with the same format.

With just a few exceptions, all of the other programming on Radio Tahiti is presented in French. During the day the programs have a strong Francophile twist with musical selections from French artists, mostly ballads and easy listening fare. A few French rock and roll tunes are also played. French rock really has a flat, twangy, almost pitiful sound. Also during the day there are news bulletins in French and Tahitian, contest programs, and a weekly women's program in Tahitian. In sum, the daytime RFO programs are pretty dull. But fortunately these are the programs that we in North America usually do not hear.

The Tahitians, for the most part, do not care much for the daytime RFO programs and do not listen to RFO much during the day. They usually listen just to hear the news bulletins. This is not to imply that RFO has no daytime listeners, as there is a large expatriate, military, and resident contingent of French people living in the islands. They no doubt find the day programs of RFO more appealing than the native Tahitians do.

In recent years there has been a plethora of Tahitian oriented FM stations that have

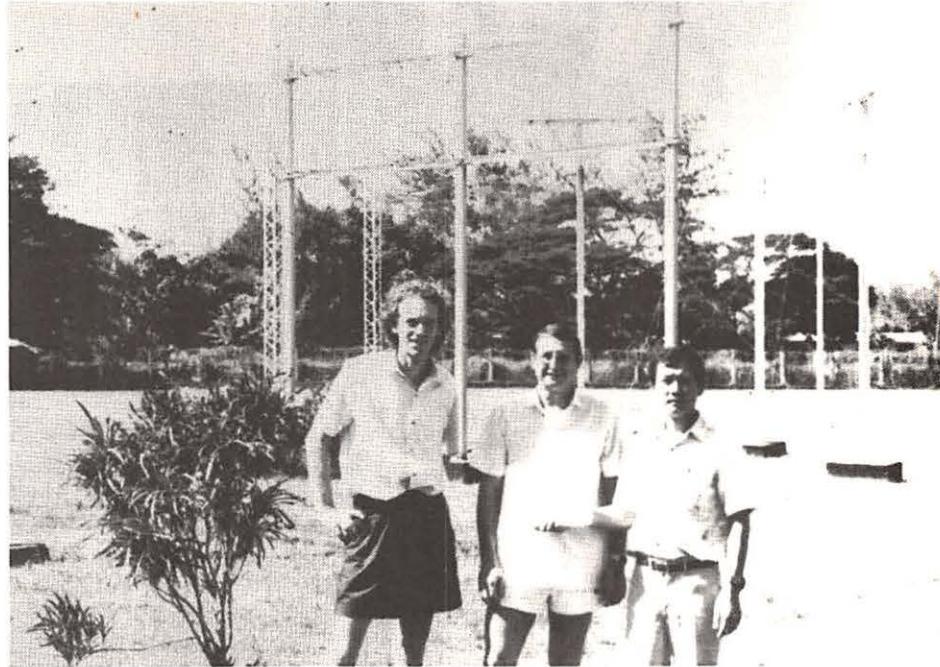
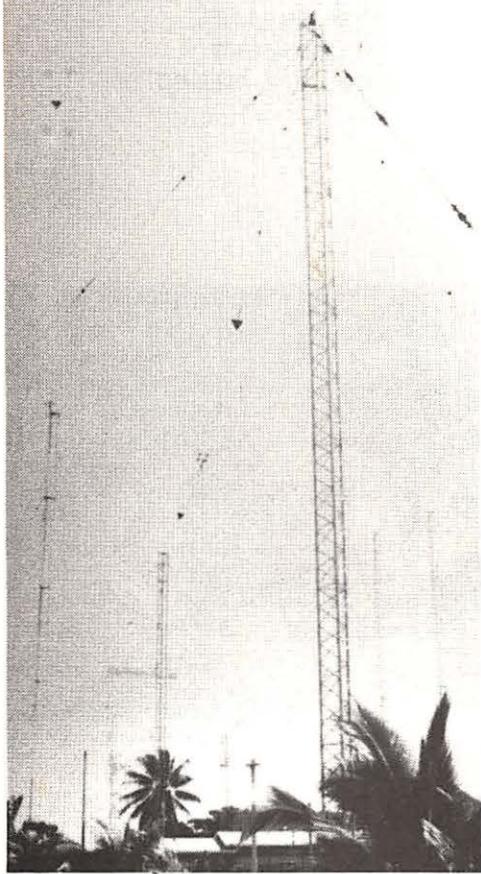
taken to the air. On one day I counted 20 of these FM stations on the air. They are all privately funded and specialize their programming. Some play rock music, a couple play easy-listening music, one classical, and the remainder play Polynesian music. For entertainment the Tahitians tune in to these stations. The staff at RFO readily admits that they do not attempt to broadcast programs which reflect a good deal of Polynesian culture. The station functions more as a voice of French culture in the South Pacific than as a local organ.

No World Voice for Radio Tahiti

The broadcasts of RFO are intended solely for home consumption. The station is officially purported to have no role to play in informing the surrounding Pacific island nations or the world about Tahitian life, culture or political and economic interests. Paris and not Papeete calls the tune. Radio France International in Paris is the sole external voice of France and the French territories. Local radio stations in the territories, such as Radio Tahiti, are not permitted to represent their local opinions or culture to external audiences. This is unfortunate indeed.

The staff members at Radio Tahiti agree that it would be a good thing for Americans, Europeans, Asians, etc. to learn more about Tahiti and its culture and its political and economic concerns. However, they are firm in asserting that Radio Tahiti can play no part in

Left, Radio Tahiti's transmitter site at Mahina; Below, at the transmitter site I am met by Jacky Barillec, technical director, Andre Blondy, TV department manager, and Leon Siquin, principal technical specialist.



informing the world of such interests.

Fortunately, Radio Tahiti's QSL policy does not reflect its provincial broadcasting interests. Mr. Siquin acknowledges that he is well aware that Radio Tahiti has many listeners abroad. The station receives reception reports from throughout the world. He also confessed that reception reports from outside of French Polynesia do not really provide any information that is of statistical value to the station. However, they do send QSL cards to overseas listeners who send in reception reports. They send the cards as a matter of courtesy and as encouragement to radio hobbyists. A new batch of QSL cards with a new logo has been printed and is ready for distribution.

Transmitter Size

Accompanied by Mr. Siquin I visited the Radio Tahiti transmitter site at Mahina. The transmitters and a building which houses the technical offices of RFO are located on a four acre site that overlooks the ocean. It is close to Point Venus, the site where the first Europeans to visit Tahiti dropped anchor. Just offshore is a small motu (island).

We are greeted at the transmitter site by Jacky Barillec, the assistant technical director, and Andre Blondy, the manager of the television department. Both are dressed very casually in short pants and Teledifusion de France tee shirts. Unlike the Papeete office building, this one is spacious and sparsely manned. It has a relaxed and casual air with

many maps of relay sites around the islands and maps of other RFO operations in the French overseas territories.

Barillec and Blondy inform me that the shortwave transmitters currently in use are four kilowatts on 6135 and 9750 kHz and 20 kilowatts on 11825 and 15170 kHz. Most North American listeners hear the 11825 and 15170 kHz transmitters which are beamed in a northwesterly direction to the Tuamotu islands in French Polynesia's northern island group. The 6135 kHz transmitter is beamed to the Marquesas island group in the north and 9750 kHz is beamed to the Gambier island group in the south.

Future Plans

RFO has plans to construct a total of 25 earth relay stations in French Polynesia to make it possible for all French Polynesians to receive both AM and FM broadcasts from Papeete. Thirteen of these stations have already been completed.

Two new transmitters are due to be placed in service in 1990. They will be 80 kW and 50 kW in power and will give Radio Tahiti a more powerful voice in the Pacific than the Voice of America. It should also make it a bit easier for SWLs in North America to hear Radio Tahiti on the shortwave band.

A new studio building is also planned. Money for the new building has already been allocated by Paris and land for the building has already been secured. The new building will relieve the crowded conditions in the

current Papeete studio building. Much of the space in the new building will be allocated to television which is still in its infancy in French Polynesia. Presently there are three TV channels in operation and one of these is an educational channel.

A Station with a Big Heart

My visit to Radio Tahiti had consumed the better part of the day and the staff had been particularly kind and cooperative. This station is operated by professionals who really know their job. They also have a sympathetic admiration and respect for the radio hobbyist. I was impressed by their dedication, professionalism and sensitivity.

Two days later I said goodbye to the Taputuarais. They showered me with the traditional shell leis that Tahitians use to wish departing friends and relatives a fond farewell. I boarded a jetliner bound for Rarotonga in the Cook Islands and vacation.

As the big 767 jetliner pulled away from Tahiti and floated out over the island of Moorea, I looked down at these two island pearls in the shiny blue Pacific. I thought of the DXers and SWLs in distant lands who tune to Radio Tahiti on some frigid, snow-filled night and hear the soft lilting Polynesian music. I'm sure they conjure images in their minds of beautiful islands in a shiny blue ocean very much like the shining image that floated below me.

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List price \$449.95/CE price \$299.95/SPECIAL
16 Channel • 25 Watt Transceiver • Priority Time-out timer • Off Hook Priority Channel
The RELM RH256NB is the updated version of the popular RELM RH256B sixteen-channel VHF land mobile transceiver. The radio technician maintaining your radio system can store up to 16 frequencies without an external programming tool. All radios come with CTCSS tone and scanning capabilities. This transceiver even has a priority function. A 60 Watt VHF 150-162 MHz. version called the RH606B is available for \$429.95. A UHF 15 watt, 16 channel similar version of this radio called the LMU15B-A is also available and covers 450-482 MHz. for only \$339.95. An external programming unit SPM2 for \$49.95 is needed for programming the LMU15B.

NEW! RELM® LVM2548B-A

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12-Band, 40 Channel • No-crystal scanner Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512, 806-912 MHz.
Now...nothing excluded in the 806-912 MHz band. The Uiden 800XLT receives 40 channels in two bands. Scans 15 channels per second. Size 9 1/4" x 4 1/2" x 12 1/2". If you do not need the 800 MHz. band, a similar model called the BC 210XLT-A is available for \$178.95.

NEW! Uiden® MR8100-A

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12-Band, 100 Channel • Surveillance scanner
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DRUG WAR Monitoring

by William Shelby

Smuggling narcotics into the United States is not a new phenomenon, nor is the war on drugs an overnight reaction to this problem. Although this war is carried out in the skies, on land and at sea, it is the pivotal role of radio communications which ties it all together.

The drug cartels are well aware of the importance of radio, and undoubtedly have their own comprehensive monitoring network. Through this and other methods of obtaining information, few would argue that the cartels today now probably know as much about Customs operations as Customs itself.

Hobbyists often swap federal frequency information among themselves, but fear that open publication of such data might cause an agency to change frequencies or alter call signs, or that the publishers might be visited by the authorities, or that more restrictive monitoring laws may be imposed as a result of such disclosures.

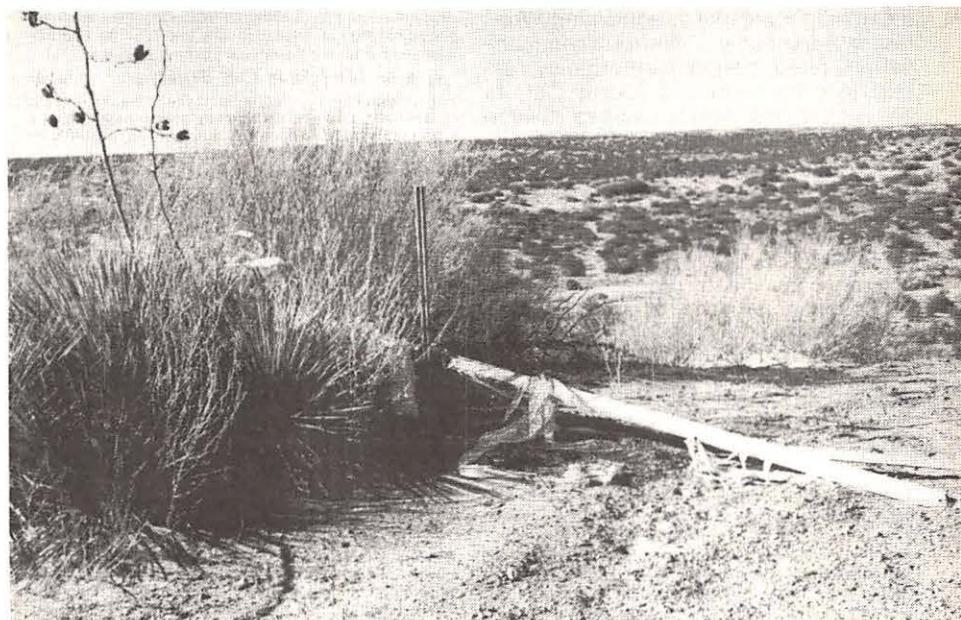
These fears are unfounded; federal drug interdiction efforts are not compromised by hobby monitoring. Voice and data encryption (scrambling) thwarts any attempts to learn information which is truly critical.

Interdiction: The Early Years

During the 1960s drugs freely entered this country. Granted, it was not in massive amounts, but by aircraft, ship, vehicle, horse and backpack it did trickle in. The U.S. Customs Service was primarily a port of entry inspection service. Narcotics were cleverly concealed aboard unsuspecting legitimate air and steamship carriers. Drugs were easily smuggled by bypassing the mandatory ports of entry.

By the early 1970s Customs and the Border Patrol had a handful of light aircraft and boats thinly spread out over the entire USA. The rapidly expanding drug cartels knew this, so organized efforts the likes of the Narc Steamship Company, Weed Airlines, Border Caravans Inc., Drug Van Lines and the Coke Air Express Service went into full gear. The US/Mexico border area literally became a highway for air and over land smugglers. On the east coast, the Bahamas, with its widely scattered chain of islands, was being established as a major transshipping area.

While we could track some airborne smugglers via FAA airport radar facilities, many of the sites were either too far apart or



Harry Baughn

Site of a drug drop on the Texas/Mexican border, ironically, within visual sight of border radar. The ribbon-bedecked pole is raised to indicate wind direction and mark the spot for the drop.

were of the mid to high altitude coverage variety, allowing aircraft to fly under the radar.

In 1971 Customs obtained four Army Mohawks -- twin turboprop observation aircraft modified to carry a steerable forward-looking infrared unit (FLIR) pod mounted under the nose. This see-in-the-dark capability aboard an aircraft that could attain 280 mph with a 1,000 mile range gave Customs its first dedicated airborne intercept and tracking aircraft.

Since marijuana was the drug most often carried and required a considerable bulk to be profitable, large aircraft like old commercial DC-3s, 6s and 7s, and even ex-military C-119 Boxcars were flying the skies. The new Customs Mohawks were ideal for tackling these birds. And for detecting ships off shore, Customs obtained four Navy Grumman S-2 Trackers equipped with surface search radar.

As the Customs "air force" grew, it was with a wide assortment of hand-me-downs from other agencies, or confiscated aircraft. Most fell short on speed, range and the ability to carry airborne tracking equipment.

By the end of the '70s, the market had shifted to cocaine; much smaller aircraft

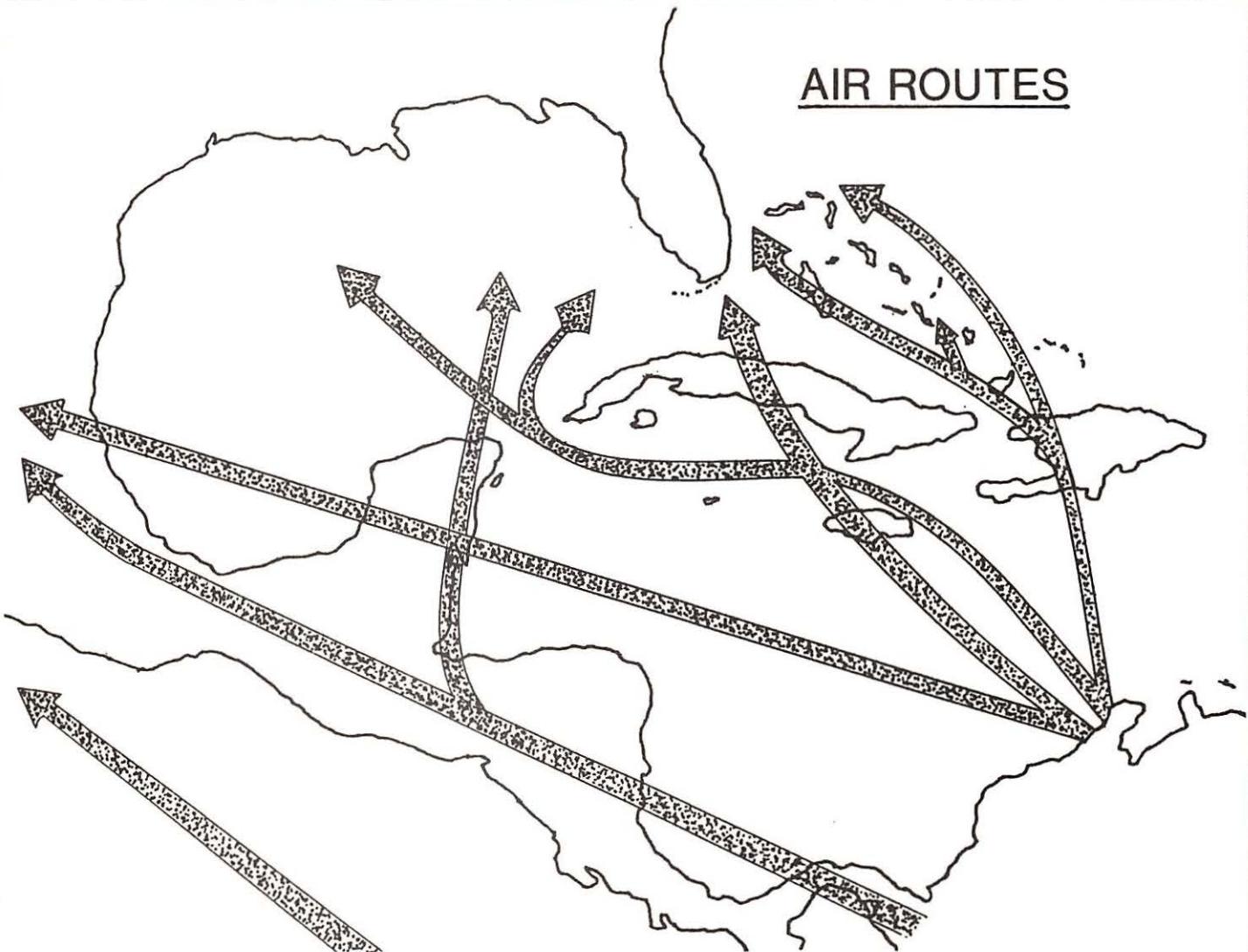
could carry enormously profitable cargoes of this new drug. Customs finally received the government funding it needed to permit them to begin standardizing on four main types of aircraft.

For its high-speed interceptors, Customs bought twin-turboprop Piper Cheyenne 3s, twin turbojet Cessna Citation 550s and several Navy, four-engine, turboprop, P-3A Orions. The Cheyennes and the Citations were modified to carry the Air Force's F-16 radar and FLIR. Both aircraft could cruise at near 400 mph for at least five hours. For long range, offshore duty, the P-3A Orion was modified to carry a FLIR pod plus the Air Force F-15 radar. For its helicopter, Customs chose the Sikorsky UH-60A Black Hawk.

It would be the early 1980s before a chain of tethered aerial radar platforms called aerostats from southern California to Florida would allow a radar scan of up to 200 miles in any direction from their 15,000 foot perches.

In the meantime, Customs obtained two Blue Eagle/Sentinels, four-engine AWACS aircraft with 14-hour endurance, 4,500 mile range, 450 mph max speed, and a relief crew. By now a third Sentinel is flying, a fourth is on order and the Hawkeyes have been retired.

AIR ROUTES



AIR ROUTES - This map shows the favorite routes of airborne smugglers. One crosses Cuba via a civil aviation air corridor, otherwise smugglers skirt around the island. The route over Haitian territory often terminates with air drops in the Bahamas or in flights to the southeastern US. Smugglers also make long flights into Mexico for eventual shipments into the USA from Colombia and Peru.

Customs P-3 Sentinels conduct a fair percentage of their radar patrols north of the Yucatan Channel area, and along a long arc from the Yucatan coast to the Lesser Antilles. On the Pacific side, they patrol off the Baja coast.

Drug smugglers often employ stolen aircraft, or those purchased

The P-3 Sentinels now have a unique role all their own: to provide long-range air/surface radar surveillance in areas not covered by ground or Aerostat radars. All AWACS aircraft are dispatched from the Surveillance Operations Center (SOC) at the Corpus Christi, Texas, Naval Air Station.

Air Operations

Throughout the fifty states and Puerto Rico, Customs operates air operations bases (primary) and units (secondary); they may also stage operations out of Guantanamo, Bahamas and other Caribbean locations. The most interesting to monitor are those in the

southern tier of states, located at military air bases. On HF they employ colorful tactical call signs like Desert Base, Empire, Fried Chicken, Home Plate, Jackpot, Longhorn, Mushroom and Ping Pong.

Each main base is assigned at least one Cheyenne, Citation and Black Hawk, in addition to several other aircraft used for training and local customs support. Most numerous are the Cessna 210 Centurion, Cessna 404 Titan and the Beech Super King Air 200. A disproportionate number of aircraft are concentrated in Florida, the Bahamas and Caribbean.

On HF, Customs aircraft identify as

through dummy companies, then modify them with extra fuel tanks. Multi engine types are preferred for long over-water flights and their load-carrying capacity. Most Colombian air and ship departures are made from the Peninsula de la Guajira area, but other jump-off points are used as well.

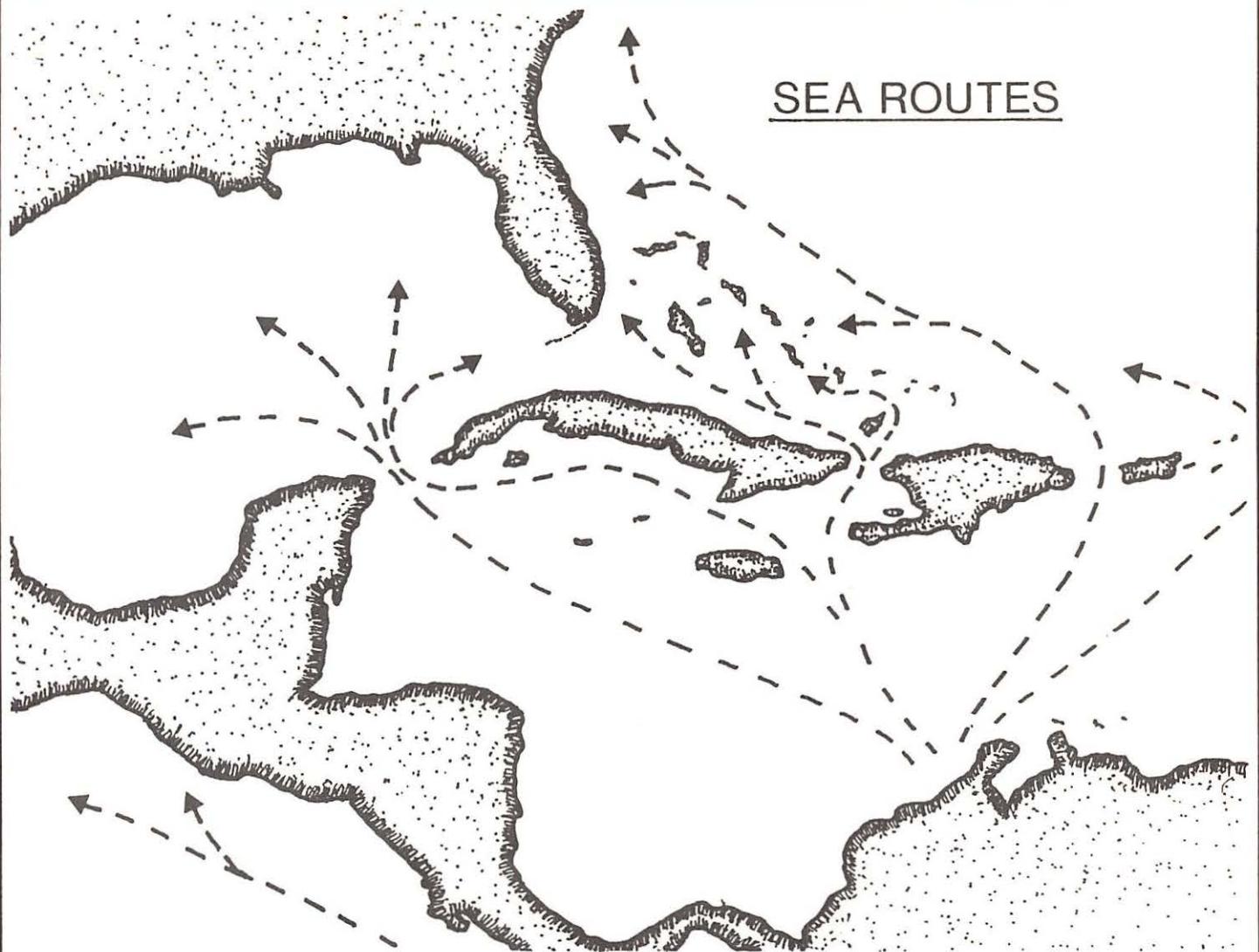
Cartels reportedly pay pilots between \$25,000 to \$250,000 per flight, making the risk worthwhile. Some stolen aircraft are deliberately abandoned after landing and off-loading their cargo. The cartels can afford to pay top dollar to their smugglers, lose crews, aircraft and many shipments, and still make outrageous profits.

"OMAHA" plus the last two numbers of its civil registration. For example, in a recent aviation magazine article there was a photograph of a Customs Citation with the registration of N753CC -- Omaha 53.

On VHF/UHF Customs aircraft identify as "Lima" plus the numerical suffix. Air bases also use the Lima prefix along with a three or four digit suffix which always end in a double zero. For example, the Customs aviation office at San Angelo, Texas, IDs on HF as Black Sheep; its company call sign is Lima 1400. All San Angelo air agents are assigned 1400 series identifiers.

Customs aircraft using a "Tango" prefix

SEA ROUTES



SEA ROUTES - Vessels leaving Colombian ports are primarily ocean-going cabin cruisers, fishing boats and coastal freighters. The larger vessels are often utilized as mother ships, transporting drugs to rendezvous points, then transferring cargo to small fast boats or landing cargo along a coast for the last leg into the USA.

The four main choke points which are patrolled for surveillance are the Yucatan Channel between the Yucatan Peninsula of Mexico and Cuba, the Windward Passage between Cuba and Haiti, the

Mono Passage between the Dominican Republic and Puerto Rico, and the Anegada Passage east of the British Virgin Islands. Pacific-side smugglers off-load at various points along the Central American and Mexican coast for trans-shipping into the USA.

Not shown are the routes which first take drugs to European, African and Far East ports, then, via unsuspecting steamship carriers, are subsequently carried to major US and Canadian ports. Smuggling by sea offers the greatest profit margin because of the cargo capacity.

are on a training exercise. A "Sierra" prefix is an administrative flight. Omaha call signs with a three number suffix. A group of them have been repeatedly heard. These include: Omaha 086, 255, 338, 370, 496, 558, and 734. It is assumed that this is a way to differentiate aircraft with the same last two numbers. What is interesting to note is that these triple Omaha call signs have one thing in common: all at one time or another work Fried Chicken.

Diplomacy

Our government has agreements with several Caribbean nations concerning drug interdiction in their territories. Since Cuba and the Dominican Republic forbid such overflights, smugglers often fly within their

Air Defense Intercept Zone (ADIZ).

Frequencies and Security

For a decade following the early 1970s, Customs employed a number of HF frequencies which by now are well known to everyone—the Xray, Yankee and Zulu groups:

XA-2808.5	YA-3428	ZA-4500
XB-4991	YB-5571	ZB-7527
XC-5058.5	YC-8912	ZC-9802
XD-7778.5	YD-11288	ZD-12222
XE-9238.5	YE-13312	ZE-15867
XF-11073.5	YF-17972	
XG-15953.5		
XH-17601		
XI-19131		

But times are a-changin'. During the 1980s Customs began implementing a more secure means of communications. COTHEN (Customs Over the Horizon Enforcement Network) consists of several aspects, including automatic selective frequency scanning (called "auto call" or "auto selscan"). COTHEN radio technicians may be heard identifying as "COTHEN" plus a numeric designator.

Instead of guarding one or two frequencies, all assigned selscan frequencies are continuously scanned. When an operator wishes to contact another stations, he keys in and transmits the appropriate ident code, a five-second data burst sounding like a machine gun. If no contact is established, the call is repeated on progressively higher

assigned frequencies until a short acknowledgment burst is received, confirming good signal exchange and locking the stations on that frequency. To maintain good communications, Customs uses several HF remote relay sites:

At other times Customs employs "channelizing" which manually locks their radios on one frequency to eliminate link-up time lag experienced on auto selscan, and because not all interfacing military agencies have the selective scanning system.

Secure voice ("Secure Key", "Kilo", "Sierra Kilo" or "Q") is provided by the Collins digital voice scrambling system. Extremely effective among Customs units, it cannot interface with the military KY-75 Parkhill secure system.

With the implementation of the COTHEN system, many frequencies changed, including the deletion of some of the Xray, Yankee and Zulu channels. At this writing, ten frequencies make up the selscan block: 7527, 8912, 10242, 11494, 13907, 15867, 18594, 20890, 23214 and 25350 kHz USB. Other frequencies are in the "Tango", "Victor" and "Whiskey" series.

Auto selscan is also used on FAA frequencies like 4055, 5860, 6870, 7475, 8125, 13630, 16348 and 20852 kHz as well as FAA/flight test assignments like 5571, 11288 and 13312 kHz. Six Customs areas served by remote radio sites are designated "Charlie Sierra" plus a number.

Some selscan transmissions are used electronically to assess propagation conditions, the Link Quality Analysis (LQA) procedure. In a call-up mode the selscan system bypasses active frequencies; in the LQA mode, however, the transmission progresses even though it causes interference.

Intercept Procedures

Customs has two main command, control, communication and intelligence (C3I) facilities. One is a combined Customs/USCG facility at Miami, Florida, with the call sign "Slingshot". Its west coast equivalent, "Hammer", is at Riverside, California and, on VHF/UHF they are called "Lima 950". "Blue Fire" is the radar tracking operations center at Houston, Texas. A third C3I installation, the National Aviation Center, is presently under construction at Oklahoma City, Oklahoma.

When private and commercial aircraft file a flight plan they are given a transponder ("squawk") code. Customs has access to these and can quickly wade through thousands of airborne targets to make a determination if they are legitimate or not since most smugglers fly without a flight plan or a

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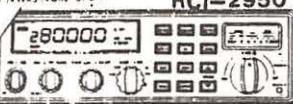
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genuine squawk code, and do so at relatively low altitudes.

Once such a target is detected, a Customs aircraft is dispatched and guided to intercept on VHF or UHF frequencies like 165.7375 MHz, (381.8 MHz, C3I East's "Blue One"), and 282.425 (Blue One for C3I West). Because of tactical sensitivity, UHF frequencies are periodically changed.

VHF and UHF frequencies are IDed by "Victor" or "Uniform", respectively, followed by a number (1 through 4). Each C3I center utilizes four VHF and four UHF frequencies which may be remote controlled across the country.

Three new, fully integrated detection and monitoring Joint Task Force centers, staffed by agents from the Navy, Coast Guard, Department of Defense, Customs, DEA, FBI and NSA, are now operational at Key West, Florida; Alameda, California; and El Paso, Texas.

A relocatable (transportable) Over-the-Horizon Backscatter Radar system is being developed by the Navy. This new ROTHR is designed to provide land-based surveillance of aircraft and ships far out at sea. Initial tests conducted recently at separate transmit and receive sites at Whitehorse and Chesapeake, Virginia, proved reliable over a 60 degree arc for up to 1800 miles, an area that would require 12 AWACS aircraft to patrol—virtually the entire Caribbean!

The ROTHR electronics were subsequently moved to an operational site on Amchitka Island in the Aleutians, but since the Virginia antennas are still in place, the Navy intends to install a production model at that site for Caribbean anti-drug surveillance,

Intercept and Shadowing

Once a suspect aircraft has been detected, the nearest Customs air facility dispatches an interceptor; the aircraft maneuvers into its target's blind spot, lights switched off at night.

Initially, the aircraft type and registration number are identified. During daytime, this can be accomplished with binoculars; at night, FLIR is employed and its images, along with superimposed data, are video taped. Information is processed by a ground station, revealing flight plan, transponder code and registration.

Aircraft and owner information are run through the (Treasury Enforcement Communications System (TECS) and the National Crime Information Center (NCIC) to ascertain if the aircraft or its owner has any previous suspicion of drug trafficking.



Jorge Rodriguez

As the drug market shifted from marijuana to high-profit cocaine, Customs upped its technology to keep step with traffickers. Here a Customs Blackhawk helicopter practices interdiction exercises.

If the plane air-drops its load, the interceptor will radio in the position and circle the drop zone until ground or sea authorities move in. When the aircraft lands, local authorities are alerted to converge on the site or a Customs aircraft may land right behind the suspect to make the arrest.

Customs aircraft rarely employ secure voice on VHF, and not at all on the UHF AM mode. When they do, it is the voice masking system called the "Motorola Blaster". Ground agents refer to it as "Secure" or "88." Its roaring sound is deafening and quite effective within a local area, but suffers with distance, making the voice intelligible. Plans are to modernize the system similar to that used on HF.

For radio positioning, Customs has divided the southern states into east, central and west divisions, referred to as "Echo", "Charlie" and "Whiskey" followed by numerals. These locations are probably VORTAC sites.

Coast Guard Involvement

The USCG is America's maritime police force. HC-130s fly long-range patrols and, when required, provide airborne HF radio relay of UHF communications between Customs and USCG units and C3I Miami. High speed HU-25C Night Stalkers, modified HU-25A Falcon search and rescue aircraft, are equipped with radar and FLIR. Their 525 mph speed and five hour endurance allows them to range far and wide over the Caribbean.

The Coast Guard's four E-2C Hawkeyes are not really adequate; at least one of their saucer-dome radar instrumentation is being

moved to an HC-130. Helicopters are deployed directly from shore bases or cutters and the short-range HH-65A Dolphin can be deployed from Navy assault ships.

The most unusual Coast Guard aircraft are two Lockheed RG-8A motorized gliders; with exhaust muffling and a special propeller, they cannot be heard beyond a few thousand feet. Fitted with FLIR, other surveillance equipment and a two man crew, whatever they are doing is accomplished very silently.

Many Coast Guard aircraft on the Gulf Coast employ Navy-style alphanumeric (triglyph) tactical call signs like Yankee Five Victor when working air-to-ground stations like Slingshot; when they contact the C3I East net, they may be "Joker 33" or "Swordfish" followed by its last three tail numbers.

The USCG sometimes employs color prefixes to identify frequency ranges: Brown (HF), Black (VHF) and Yellow (UHF). When operating in conjunction with Customs units or when under the control of C3I East, UHF references are normally the Customs "Blue" or "Uniform" designators. There is some indication that Coast Guard units working C3I east are COTHEN equipped.

mt

Next month, MT concludes this in-depth account of U.S. drug interdiction efforts with an eye-opening look at military and other federal agency involvement and the most complete list of drug war frequencies and call signs ever published.



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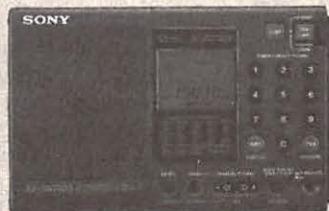


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DXing CHINA'S Shortwave Voices

by Charles Sorrell

China has fascinated the west since we first learned of its existence hundreds of years ago. It wasn't long before "foreign devils" made their first visits, discovering a civilization in many ways more advanced than their own. The lure of China was -- and remains -- strong, and extends even to such things as shortwave DXing.

Like all things having to do with China, DXing the country can be both rewarding and frustrating. There are many things to hear.

Very large and populous nations such as the People's Republic of China call for very large and complicated broadcasting systems. Beyond Radio Beijing and its foreign service, there are four other centrally operated networks using shortwave, plus two more run by the People's Liberation Army, plus a couple of fairly new stations which aren't really part of the above, plus a couple of others. We won't even get into the mediumwave (AM radio) scene which includes well over 500 stations in all parts of the country.

Not all of the frequencies listed for the various shortwave services from China are active at any one time. Some, including both international and provincial stations, are used on a seasonal basis. Others become empty for no apparent reason, only to return months or years later. Hohhot on 6974 kHz, for example, was heard on a regular basis up until a year or so ago and now seems inactive on this spot.

Some of the frequencies are used by more than one transmitter site. Further, a particular station on a particular frequency may, at various times, carry its own local or regional programming or one of the Chinese People's Broadcasting Station (CPBS) networks or Radio Beijing, while other sites stay with a single service.

Aside from Radio Beijing on the international broadcast bands your best logging opportunities are with the various CPBS networks, as well as the Voice of the Strait. Look for them especially on the oddball frequencies they seem to favor.

A few of the provincial/local stations are also loggable. Best times to tune are during the 1000-1500 period, depending upon where you live in North America. Fortunately, though many of the stations operate with split schedules, they almost all are active during the equivalent of our morning hours, at least as far as the provincials on the lower bands are concerned.

Radio Beijing

Radio Beijing broadcasts in some 40



Radio Beijing's headquarters in the capitol

languages over transmitters running powers of up to 500 kW. Well over 100 frequencies are used at various times, broadcasting to target areas in nearly every part of the world.

As might be expected, Asia gets considerable attention, but so do audiences in Africa, Europe and the Americas. English for North American listeners runs to eight hours per day, with programs provided in both our mornings and evenings. Programs generally end two or three minutes prior to the end of the hour.

Currently, English for North America is aired at 0000-0100 on 9665, 9770 and 11715; 0300-0400 on 9690, 9770 and 11715; 0400-0500 on 11695; 0500-0600 on 11840; 1100-1200 on 9665; 1200-1300 on 9665 and 1400-1600 on 7405. Radio Beijing's foreign service is transmitted from several different sites within the People's Republic, as well as several foreign relay sites. Many of the Radio Beijing frequencies just carry Chinese to various parts of Asia.

The shades of China's policies have changed many times over the years, from the violence of the Red Guards through the liberalization of the "Let a thousand flowers bloom" period. But no matter what is happening within China, Radio Beijing always seems to remain an excellent verifier of reception reports, failing only when it came to indicating transmitter sites.

The gradual opening up of China and its increased connections with the west has changed that. Radio Beijing will now confirm at least some of its local relay sites -- Xian, Jinjua and Shijiazhuang are examples, and will confirm its foreign relay sites in Spain, French Guiana, Canada and Switzerland, if asked.

Central People's Broadcasting Station

This is China's domestic broadcasting organization, which runs several networks out of its Beijing headquarters.

Network One (abbreviated CPBS-1) is aimed at the general public and includes a mixture of programs, including a good deal of domestic propaganda. It signs on with a vocal version of "The East is Red" and closes with the Communist "International."

CPBS-1 is on the air between 2000-1700, except for a near three hour break on Tuesdays beginning at 0900. Listen for the Chinese ID "Zhongyang Renmin Guangbo Diantai." CPBS-1 can be heard in North America on many different frequencies, from the lowly 3220 to the topside 17605. Out of band frequencies (see listing) provide the best chance not only to hear the thing but to be sure of what you have.

Network Two (CPBS-2) is more of a news and information network. At one time, at least, it even broadcast dictation speed news. It is on the air from 2100-1600 with a Friday break from 0530-0900. It is heard on about as many frequencies as CPBS-1, many of which are heard fairly regularly. Try 6750, 6840, 10010, 11330, etc.

CPBS also runs a pair of services beamed at listeners in Taiwan which are designated Taiwan-1 and Taiwan-2. Taiwan-1 broadcasts in Putonghua (standard Chinese) between 00530-0609 and 0953-0004. (We've never seen an explanation for all these odd on and off times). 5125, 9380 and 11100 are all fairly reliable frequencies to try for Taiwan-1

Dear

We are glad to have your reception report on our program transmitted on 4830 kHz at 1235 hours- 1301 hours G.M.T. dated Nov. 28, 1980.

Your further reception reports on our broadcasts are welcome.

Liaoning PBS
of China

Radio Beijing will sometimes QSL on behalf of provincial stations.

broadcasts.

Taiwan-2 uses standard Chinese, Hakka and Amoy and is scheduled between 2053-0104 and 0353-1804, except on Wednesdays when it is off between 0604-0953. This service is not aired on as many channels as Taiwan-1. Your best bets are probably 9170, 11000 and 15580.

CPBS is also in charge of the Minorities Services. Various stations and frequencies carry this at various times of the day, though each runs for only 25 minutes. Broadcasts are aired in Kazakh, Mongolian, Tibetan, Korean and Uighur. See the transmitter/frequency list for CPBS for indications of which stations carry these.

The various CPBS networks can often be QSLed by writing to Radio Beijing. We don't know of any listeners who've tried going direct to CPBS but, these days, there's no reason to think that wouldn't bring results. The CPBS

address is XiChang An Jie 3, Beijing. Incidentally, be sure to use the full country name -- People's Republic of China -- in the address.

Voice of the Strait

Formerly known as People's Liberation Army Radio -- and the Fujian Front Station -- since 1984 has been calling itself "The Voice of the Strait." Whatever the name, this is the People's Liberation Army broadcast effort toward Taiwan.

There are two services, designated Haixa-1 and Haixa-2. Both broadcasting in standard Chinese and Amoy and are headquartered in Fuzhou, Fujian Province, almost directly across the strait from Taipei. Haixa-1 is on the air between 2053-0031 and 0953-1751. Haixa-2 airs from 0353 to 1626.

Both can be heard fairly easily by North American shortwave listeners. Look for Haixa-1 on such frequencies as 5510 and 11590. Haixa-2 is somewhat more difficult. Try 3200, 4330 and 5770.

Even during the days when Beijing was being tight with its QSL information, the Fujian Front Station was issuing QSLs. That's a bit ironic considering the PLA's broadcasts might be presumed to be more sensitive and something about which the Chinese might want to maintain more security.

As of a couple of years ago, the Voice of the Strait was issuing some exceptionally beautiful QSLs. Reports can be sent to the Voice of the Strait, P.O. Box 187, Fuzhou, Fujian, People's Republic of China. Incidentally, English language reports seem to work for all of the Chinese stations and return postage is never necessary.

Provincial and local stations

There are well over two dozen of these operating on one or more shortwave frequencies each. They are named after the province in which they are based -- followed by People's Broadcasting Station, so that, for

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instance, the station in Lhasa is Xizang PBS (in Chinese, Xizang Renmin Guangbo Diantai). Again, most of these stations operate on split schedules and, fortunately, most are on the air during our mornings.

The past couple of seasons have not produced as many appearances by the Chinese provincials as was the case a couple years ago. But this season has so far produced loggings of such outlets as Fuzhou-5040 kHz, Hailar-3900 kHz, Harbin-4840 kHz, Junming-4760 kHz, Lhasa-4035 kHz, Nanchang-5020 kHz, Nanjing-5010 kHz, Urumqi-4500 kHz and Zining-6260 kHz. Some of the stations, such as Wenzhou-2415 and Tianjin-4100, seem never to have been logged in North America and others are exceptionally difficult, though not impossible to hear.

In the past Radio Beijing has QSLed on behalf of many of the regional stations. However, many of them also respond to reports sent direct so the Beijing route, while probably faster, isn't the only way to go.

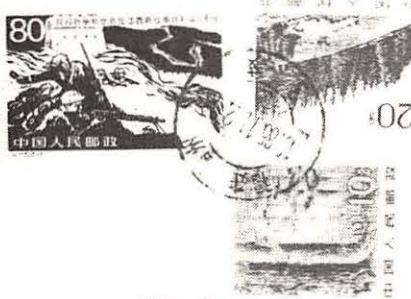
Other stations

The Voice of Jinling, based in Nanjing, Jiangsu Province, directs its broadcasts to Taiwan, using 4875 (where it's most likely to be heard) and 7215. It began broadcasting in late 1986 and is operated by staff members of Jiangsu PBS. Check for it sometime prior to your local sunrise. This station is a reliable verifier. Reports go to the Voice of Jinling, P.O. Box 268, Nanjing, Jiangsu.

海峡之音广播电台

"VOICE OF THE STRAIT"

FUZHOU, PEOPLE'S REPUBLIC OF CHINA



航空

PAR AVION

This envelope to Andrew Gordon contained a Voice of the Strait QSL



陕西天文台

Thank you for your reception report of BPM. This is to verify the following report:

Call BPM Frequency 15MHz
 Location 109° 31' E, 35° 00' N
 Date 6/9/80 Time 13: 28 GMT
 Radiated Power 10-20 KW
 Antenna omnidirectional

Signature Yang Huai-xu

Title Chief, Section of Science and Technique

China's time station --BPM-- sends an attractive QSL card, too.

Also broadcasting to Taiwan is the Voice of Pujiang, from Shanghai, which started on January 1, 1988. The broadcasts are intended to raise "patriotic sentiment, giving impetus to unity and reporting news of the motherland." It's heard during the same time frame as Jinling, operating on 3280, 3990, and 4950, the latter the best heard. Reports go to P.O. Box 3064, Shanghai.

BPM is a time station operating on 5000, 5430, 9351, 10000 and 15000 at various times (10000 runs 24 hours). It's not difficult to figure out which frequencies offer the best reception possibilities here. Time signals are given every hour in both Morse code and voice (by a woman) every other hour between 1000-1800 on 5430 and every hour between 1100-2300 on 9351 kHz. This station has been heard by quite a few listeners throughout North America. Address: c/o Shaanxi Astronomical Observatory, China Academy of Sciences, P.O. Box 18, Lintong (near Xian).

Almost nothing is known about the Hunan Meteorological Station except that it reportedly operates on 5175 kHz. To the best of our knowledge, it has never been heard in North America. It is believed to be located at Baokang and operates only irregularly. The programs are believed to include weather reports along with music which would nominally qualify it as a broadcaster.

Unfortunately, for our purposes, anyway, China has discontinued some other stations which were once active on shortwave. There was another time station active (BPV) until a few years ago. The Pihai Fisheries Station ostensibly aired programs for the Chinese fishing fleet. The New China News Agency could occasionally be tuned with dictation speed newscasts. Although China is still involved in some under-the-table clandestine broadcasting, this has been cut back in recent years as China takes a less hostile stance toward its neighbors.

But even with these stations gone, there's still a great number of targets to try. It's a 100 to 1 shot that you'll get them all, but half the fun is

the chase--win or lose. Confucius probably had a saying that would apply to that.

Radio Beijing

Domestic and Foreign Service Frequencies and Transmitter Sites

Beijing	3960, 4020, 4130, 4200, 4620, 5145, 5220f, 5250f, 5850, 6290f, 6430f, 6590f, 6810, 6825f, 6955f, 7165, 7180, 7340, 7420, 7480, 7820, 8260f, 8345f, 8425f, 8660f, 9440, 9480, 9765, 9880, 9945, 9965, 11455f, 11490f, 11500, 11505, 11515, 11650, 11745, 11755, 11980, 15235, 15285, 15330, 15420, 15435.
Xian	6920, 6933, 6955, 7140, 7315, 7335, 7350, 7360, 7375, 7385, 7470, 7660, 9365, 9480, 9530, 9570, 9575, 9590, 9700, 9785, 9820, 9860, 9900, 9920, 9945, 11365, 11500, 11575, 11650, 11675, 12055, 15165, 15260, 15290, 15220, 17710.
Kunming	4960, 6025, 6035, 6140, 6165, 6860, 6995, 7190, 7350, 7590, 7700, 7780, 7800, 9455, 9605, 9625, 9670, 9690, 9860, 9920, 11445, 11500, 11650, 11660, 11685, 11695, 11780, 12110, 15135, 15440, 17533, 17680.
Huhhot	4883, 7120, 9725
Lhasa	4035, 5935, 7110, 9490
Jinhua	11855, 11980, 15195, 15455
Nanning	5050
Baoding	6140, 7260, 7295, 9530, 11945, 11980, 15100, 15195
Shijiazhuang	9665, 17705
Togtoh (Radio Ulan Bator)	4815
Nobeljas, Spain	9690
Bamaku, Mali	9745, 9770, 11715, 11790, 15110, 15130, 17715
Lenk, Switzerland	3985
France	6080, 9845
Montsiriny, Fr. Gulana	11685, 11695, 13680
Sackville, Canada	11840, 11880

f = feeder

Central People's Broadcasting Station

Frequencies and Transmitter Sites

Note: M = Minorities service, 1 = CPBS-1, 2 = CPBS-2, T1 = Taiwan-1, T2 = Taiwan-2, f = feeder

Baoding	9755(2), 9775(M&2)
Beijing	4460(1), 4905(1), 5125(T1), 5320(1), 5420(M), 5880(1), 5915(1), 6015(T1), 6790(T2), 6890(2), 7935(1), 9170(T2), 9380(T1), 10260(M), 11100(T1), 11505(2), 11630(M), 11740(2), 11925(T1), 12200(2), 15390(1), 15550(1), 15590(1), 15880(T2), 17605(1), 17700(2).
Changji	5060(M), 5090(T2).
Dongsheng	4525(M).
Hailar	6080(M).

Hohhot	6974(M).
Kunming	7770(2), 9064(1), 9080(1), 9455(T1), 15670(M), 17635(M).
Lhasa	4035(M), 5950(M), 5995(M), 7110(M).
Nanchang	6095(T2).
Shijiazhuang	5860(1), 6125(1), 7235(2).
Urumqi	2560(M), 3990(M), 4220(M), 4330(M), 4735(M), 4970(M), 4980(M), 5075(2), 5440(M), 5800(M), 7195(M), 7516(2), 9595(M).
Xian	5030(2), 5163(1), 7335(1), 7504(1), 8007(M/f).

Other frequencies carrying Minority Service from unknown sites: 4750, 7660, 8566, 9920, 11375, 11865.

Central People's Broadcasting Station

Network Frequencies

CPBS-1	3220, 4190, 4460, 4905, 5025, 5320, 5860, 5880, 5915, 6125, 6750, 6840, 7335, 7504, 7525, 7935, 9080, 9800, 10010, 10245, 11330, 11610, 12120, 12360, 15390, 15550, 15590, 17605.
CPBS-2	3290, 4250, 4800, 5030, 5075, 5163, 6890, 6920, 7235, 7440, 7516, 7770, 8007, 9020, 9064, 9390, 9400, 9755, 10260, 11040, 11505, 11630, 11740, 12200, 15030, 15500, 17700.
Taiwan-1	3815, 4840, 4850, 5030, 5125, 6015, 7620, 9380, 9455, 11100, 11925, 15710.
Taiwan-2	4850, 5090, 6080, 6095, 6790, 9170, 11000 15880

Voice of the Strait (People's Liberation Army)

Haixia-1	2490, 3535, 3900, 4130, 4840, 4940, 5050, 5510, 6115, 6170, 7280, 11590.
Haixia-2	3200, 4330, 4900, 5770, 6000, 9505.

Chinese Provincial and Local Stations

Listed by City

Changchun, Jilin	3310, 6070
Changsha, Hunan	4990
Chengdu, Sichuan	5990, 7225
Chifeng, Nei Menggu	4525
Dongsheng, Nei Menggu	4525
Fuzhou, Fujian	2340, 4975, 5040
Gejiu, Honghe	4930
Gulyang, Guizhou	3260, 7275
Hailar, Hulunbeier	3900, 4750, 6080
Hangzhou, Zhejiang	2475, 4785
Harbin, Heilongjiang	4840, 4925, 5950
Hezhouhen, Gannan	4310, 5970
Hohhot, Nei Menggu	3970, 4000, 4525, 6045, 6195, 6974, 7160, 9520, 9750, 11705, 11865
Kunming, Yunnan	2310, 2460, 3910, 4760, 5960, 6035, 7210
Lanzhou, Gansu	4865, 6005, 6155
Lhasa, Xizang	4035, 4750, 5935, 5950, 5995, 7110, 7170, 9490
Nanchang, Jiangxi	2445, 3700, 5020, 6040
Nanling, Guangxi	4915, 5010, 5050, 5920
Qiqihar, Heilongjiang	6150
Tianjin, Tianjin	4100
Urumqi, Xianjiang	2560, 3960, 3990, 4220, 4330, 4500, 4735, 4800, 4970, 4980, 5060, 5440, 5800, 6100, 7195, 7385, 9560, 9595.
Wenzhou, Zhejiang	2415
Wuhan, Hubel	3940
Xian, Shaanxi	6176
Xichang, Sichuan	6060
Xilinhot, Xilingol	4950
Xining, Qinghai	3950, 4940, 6260, 6500, 9780

Other Chinese on Shortwave

Voice of Jingling (Jinling zhi Sheng) at Nanjing	4975, 7215
Voice of Pujiang (Pujiang zhi Sheng) at Shanghai	3280, 3990, 4950
Hunan Meteorological Station (believed to be located at Baikang) irregular operation	5175 at 0915-0945, 5990 at 0630-0715
BPM Time Signal Station	5000, 5430, 9351, 10000, 15000 -- not continuous



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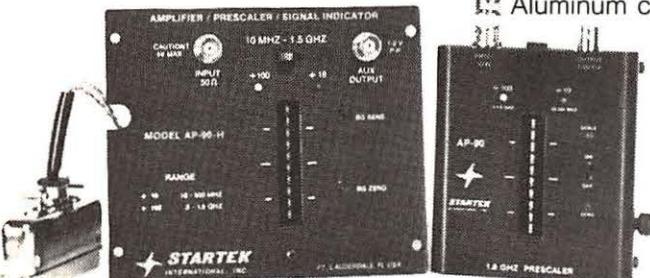


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-- FCC Chairman Alfred Sikes

by Frederick O. Maia, W5YI

It has been talked about for years -- and called blasphemous for at least as long. Now, after some of the most pitched battles ever fought on the field of amateur radio, comes the fabled no-code license.

No more will the ham hopeful have to quake with fear before the god of Morse code. No longer will the technically-oriented be confined to CB sets and names like "Big Mamma." Today, anyone who can demonstrate technical competence can obtain a ham license -- without having to learn Morse code.

Over the years, pro-code factions within the hobby argued that a knowledge of telegraphy, if of no other value, at least proved that the applicant was motivated; an indicator of the quality of the applicant.

Others, basing their arguments on more practical ground, said that Morse code was vital for emergency communications; a kind of mode-of-last-resort.

As time went on, many of these arguments began to lose their validity. Yes, there have been other campaigns to enact a no-

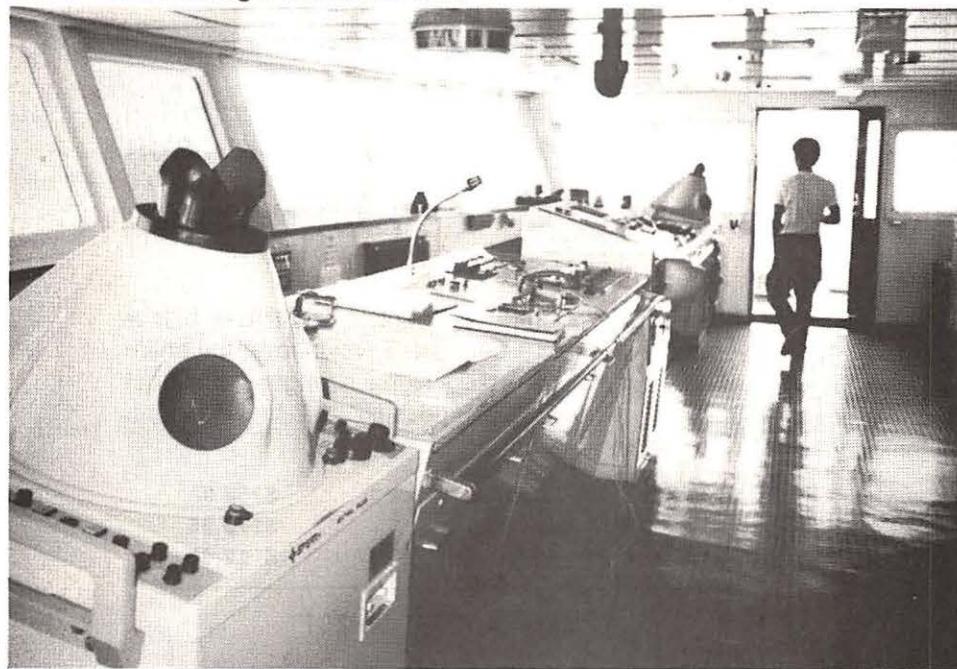
code license. But none gathered sufficient steam until 1988. The boogeyman that got the ball rolling was business -- and the grim reaper.

Amateur Spectrum Reallocated

The most precious asset the amateur radio service has, by far, is its frequencies. Hams are allocated nearly 200 MHz in the valuable VHF/UHF range - and 4 MHz at the long range high frequency level. The same VHF and UHF frequencies that made up the hobby's experimental playground years ago are today the backbone of telephone, satellite, computer linking, and a multitude of other new business endeavors.

Ham radio holds, by way of sheer seniority, title to a stockpile of radio frequencies worth literally billions of dollars. And more and more, it was finding itself in the precarious position of demanding protection for frequency space that, at least the way the increasingly cramped commercial interests looked at it, were grossly under-utilized. Couple this with the fact that the number of amateur radio operators has not only *not* been growing but has been aging dramatically, and the stage is set for an assault by commercial interests on amateur spectrum. And that is exactly what happened.

In 1988, the FCC reallocated the bottom two megahertz of the 220-225 MHz shared ham band to narrow band business usage. Representing ham radio operators, the American Radio Relay League fought the move tooth and nail, even in Federal courts. But business had sensed weakness in the ham ranks and attacked like a pit bull -- quickly, brutally and boldly.



Harry Baughn

When Morse code was largely abandoned by the maritime community, it took much of the wind out of the 'no-code' sails. A distress signal containing exact location could now be sent by any crew member with the push of a button.

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And for the first time that anyone could remember, hams and their organization, the ARRL, had lost a big one. The courts ruled that the FCC properly used their discretion in assigning the two megahertz to exclusive business operation.

Some hams, looking for a sliver of good in the ruling, pointed out that now, at least, the remaining three megahertz, once shared with other services, would be "amateur exclusive." "Three megahertz of ham radio," they said, "is better than five megahertz shared with everybody else." Despite the brave face, though, the amateur radio community was secretly spinning from the beating it had suffered.

Morse Code Signs off at Sea

For years, pro-code factions had said that, yes, because ham radio was so often called upon to provide communications in time of disaster, every ham *must* know Morse code. Images of Titanic-like events were potent rallying points, speaking to every amateur radio operator's desire to be helpful, productive members of their community.

Yet just three months after their drubbing in front of the Federal Court, ham radio's anti-"no-code" contingent suffered a blow to this keystone argument when the International Maritime Organization (IMO) made a decision to end Morse code on the high seas. The IMO is the United Nations agency dedicated to the safety of ocean shipping and they represent some 97 percent of the world's ocean-going vessels.

Indeed, Maritime radio first used Morse code to enhance the safety of life at sea. Now a new, automated satellite-based Global Maritime Distress and Safety System had come into use, allowing the crew of a ship to send a distress signal by simply pushing a button. Ships will also carry a radio beacon which will give the ship's position via GMDSS if it were to sink suddenly. Morse code, which had been the foundation of maritime distress and safety messages since the turn of the century, was obsolete.

Hams Agree to No-Code

This all got the amateur community thinking about the future. After a lengthy

review, the American Radio Relay League came to the same conclusion that many nations had already come to: it was time for the United States to update the amateur service to current communications technology by relaxing the code requirement.

The ARRL filed a Petition for Rule-making with the FCC asking for a new sixth "Communicator" class of amateur license offering limited privileges above 220 MHz without a requirement for Morse code. They felt additional ham activity was needed at that level since all spectrum above the two meter band is shared with other services.

The FCC added the ARRL petition to eleven others during late 1989 and began to rule on the process of eliminating Morse code as a requirement for entry level VHF and higher frequency operation.

On February 8, 1990, the FCC formally proposed a class of ham license, to be known as a "Communicator," which would not require a test of Morse code knowledge. According to the Commission, they would be adopting a version that basically followed that proposed



John Snyder of Morristown, New Jersey, would like to get his nine-year-old son interested in hamming. That's exactly what the ham community hopes, too, now that the code requirements are removed.

by the American Radio Relay League since the ARRL is perceived to represent amateur radio in the United States. A six month comment period was set. The FCC asked the public to be guided by three goals when submitting their views on the proposal. These objectives were:

1. a no-code class of ham license should be able to be implemented quickly;
2. without an adverse impact on the volunteer testing community, existing amateurs or the FCC and;
3. the existing computer-aided application processing equipment must be utilized without modification.

The Public Speaks!

Comments on the FCC's proposal started pouring in last summer. There were, of course, many arguing that the present license structure should not be changed. But the most surprising came from Quarter Century Wireless Association. QCWA is an 11,000 member organization of ham operators who have been licensed more than 25 years. Their formal comments to the FCC startled many who felt assured that the old-timers would be

opposed to a no-code entry into ham radio.

QCWA said "We believe that the basic requirements can be met with only one major change in current procedures being necessary to implement a viable 'No-Code' entry program. That is, remove the Morse code requirement in the present Technician class license and modify its privileges to restrict operation to assigned frequencies above 30 MHz to comply with international agreements."

Even more ironic was the fact that the QCWA president, Harry Dannals, W2HD, was the ex-president of one of the most vocal pro-code groups, the American Radio Relay League. ARRL wanted no-coders segregated at 220 MHz, isolated above and away from the mainstream of amateur radio.

The Envelope Please

Eventually, the six month period in which the Commission sought comments came to a close and the FCC announced its decision. The resulting explosion broke windows as far away as Seattle and Tampa.

To begin with, the FCC decided not to use the Communicator class name. Instead, the Commission adopted the QCWA proposal, simply eliminating the code requirement from the Technician Class amateur operator license.

Applicants may begin qualifying for the new no-code Technician Class 30 days after publishing in the Federal Register. Thus "no-code" should be available to the public this month.

What will the holder of the new code-free license get for his money? The answer is short and sweet. The new no-code operator obtains all current Technician class privileges above 30 MHz. This means full amateur power (a peak value of 1,500 watts) using all communications modes and emissions.

Technicians are authorized to operate computer-to-computer over the free airwaves, communicate through amateur satellites, chat through repeaters on the popular two-meter band and even establish their own over-the-air television stations. ATV, amateur television, is currently enjoying increasing acceptance using consumer camcorders linked to ham transceivers.

Yes, technician-level ham operators have very desirable privileges! In fact, the Technician Class is the most popular and fastest growing ham class of any today. There are 50% more Techs now than just five years ago. They make up more than 25% of the nation's half million hams. One can only imagine what the growth rate will soar to now that the code requirement has been abolished. Now an entry level opportunity with an array of excellent operating benefits exists to otherwise qualified persons who find the telegraphy requirement a barrier to pursuing the amateur service.

An enhanced Technician operator class is also optionally available that is informally being called "Technician Plus" for Technician plus code. Technicians who pass the 5 words-per-minute code are additionally authorized the current Novice and Technician HF privileges below 30 MHz -- including a portion of the ten meter band. No new license will be issued by the FCC when a Technician upgrades to Tech Plus; instead the HF privileges will be vested by a certificate issued by the examining team.

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Current holders of Technician licenses will be 'grandfathered,' meaning that they will keep all of their current privileges (including HF privileges).

The Commission decided to retain the Novice license in order to provide an alternative entry-level opportunity to those who can pass a 5 WPM telegraphy requirement in place of the more comprehensive written exam for the Technician. The Novice examination will continue to be available under the current system.

How Do I Become a Ham?

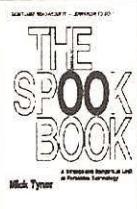
The testing requirements for the code-free Technician are two examination elements; the current 30 question Element 2 and Element 3(A), 25 questions. A total of 55 multiple choice questions are asked from a bank of 700 possible questions. No new questions are being required to be added to these question pools although some revisions of existing questions may be necessary. All of the verbatim questions, multiple choices and answers are known and widely published.

The 55 question examination may be taken all at once - or broken down into two smaller segments. You do not have to pass both test elements at the same time. You will receive a credit certificate for the portion passed.

Ham operator examination sessions are conducted at hundreds of locations around the country. There is bound to be one in your area. Call us (817-461-6443) if you are unable to locate a testing team in your neighborhood. We will tell you who to contact for testing. It has never been faster or easier to become a licensed ham operator!

Study material is available nearly everywhere since these same written test elements are required for the current Novice and for the previous Technician. The W5YI Group has license preparation material for immediate mail order shipment. VISA and MasterCard is accepted. Check the advertisement in this issue.

See you on the ham bands. 73 de W5YI,
Fred.

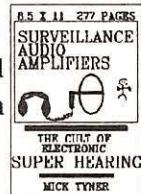


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FIRE! At Stapleton International Airport

by Wayne Heinen

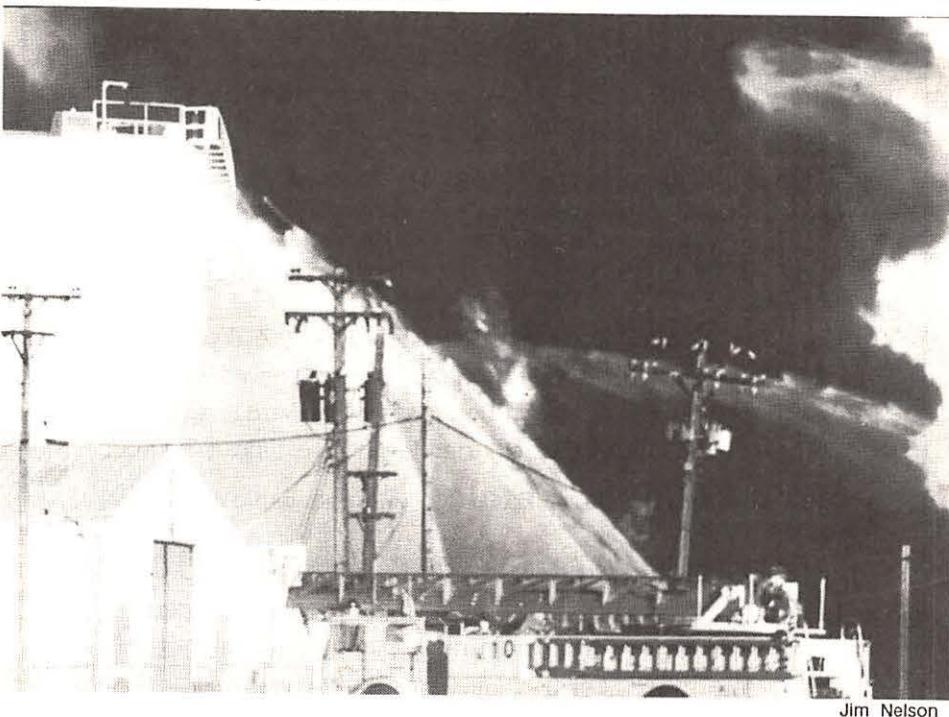
The Sunday after Thanksgiving was a typical Sunday. After DXing the broadcast band late the night before, I was lying in bed with my first cup of coffee and the *Denver Post*. My scanner was on, monitoring "My Fair City" Aurora Police and Fire and a few channels that I've found indispensable for keeping up on the Metro Denver area.

TV Channel 4 (KCNC) uses 450.1625 to dispatch their reporters and is the channel where I first learned of the tank farm fire. At 9:22 a.m. Mountain Time the control tower at Stapleton International Airport in Denver called in the first of multiple alarms on what was later to be a multi-day disaster. I heard this on Channel 4's frequency at 9:25 a.m.

I jumped out of bed and pulled open the shade on the five foot square window in the

master bedroom. From the ridge where I live, I have a commanding view of Aurora and Stapleton Airport. A huge plume of black sooty smoke was rising quickly over the city. Quickly going to the scanner, I punched up a bank of frequencies I rarely use, Stapleton Airport (see sidebar for frequencies). Without leaving the comfort of my house I was in on one of the worst fires ever seen in Metro Denver.

The fire crews were very busy trying to keep the fire confined to two 400,000 gallon



Jim Nelson



Jeff VanSkoyk

tanks that had ruptured. Sitting right next to these tanks and the fire were two 800,000 gallon tanks. These tanks were designed to rupture instead of explode when a fire occurs. Columns of water were sprayed on the larger tanks in an effort to keep them from rupturing. Foam was used in an attempt to keep the flaming jet fuel contained.

The flames were shooting hundreds of feet in the air and were discernible in the smoke column from my house 12 miles away. Their efforts were hampered by winds

Stapleton Airport Frequencies

- 118.300 Tower E/W
- 119.500 Tower N/S
- 121.900 Ground Control
- 130.225 United Maintenance
- 129.500 United A-Concourse
- 131.350 United Gates/Schedule
- 131.075 United B-Concourse
- 131.970 E-Concourse
- 154.070 Denver Fire Channel 2 (Simplex)
- 856.4375 Tower/Fire Ops
- 857.4375 Maintenance/Snow Removal
- 858.4375 Building Maintenance
- 859.4375 Technical Support
- 860.4375 Stapleton Police

STAPLETON AIRPORT FIRE

ranging 15 to 20 mph and record-setting 74 degree heat. By following the action on Channel 4's dispatch channel, I was able to turn the TV on at the appropriate times to watch their live coverage at the scene.

Due to the enormity of the fire, foam became scarce. Dispatches were being aired throughout the day as equipment and foam was brought in from Buckley ANG. Foam was also brought in locally from Rocky Flats Weapons Plant, the City of Westminster and the City of Aurora. Later in the evening of the first day, a convoy from Ft. Carson, Peterson AFB and the City of Colorado Springs was heard to arrive with more foam.

As Sunday drew to a close, we could hear Denver Fire commanders getting ready to contact OshKosh Equipment to see how much damage would be done to their rigs if they used alcohol based foam. Alcohol based foam was not recommended for use with their equipment. The shortage of foam was evident.

Traffic at the airport was not affected severely. Some delays for some flights were being reported. United Airlines was the hardest hit as their source of fuel was the tank farm that was burning.

Following their ramp control and maintenance frequencies led me to believe that the media didn't have the full story. United was bringing in every available jet fuel tanker and was attempting to re-fuel their planes on the ramps. Fuel was being brought up from other smaller aviation suppliers and even Buckley ANG. Many flights were delayed, some were diverted to Cheyenne and Colorado Springs for fuel and some were canceled.

The Denver Water Board estimated that over 24 million gallons of water were used on the fire within the first 24 hours. The Denver Fire Department estimated the temperature of the inferno at over 3500 degrees. At any one time an estimated 100 fire fighters were on the scene. Five fire fighters were severely overcome by smoke and heat and required hospitalization.

As the fire moved into day two, operations at Stapleton were pretty much stabilized. Foam was flown in from Houston, Texas, by Continental Airlines, Seattle, Washington, by United and a city in Pennsylvania by an air freight company. This

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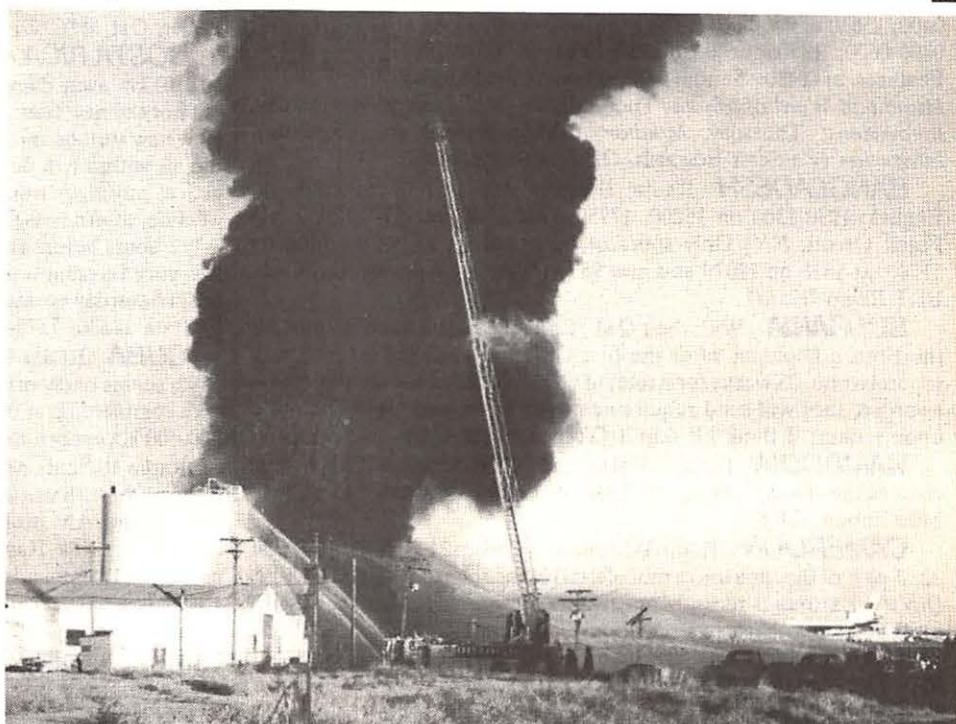
"airlift" resupplied the fire fighters who had used most of the available foam in the state. The fire crews were being rotated on a twelve hour schedule and live updates on TV were down to every few hours. Millions of gallons of water were still being sprayed on the closest tanks.

Most everyone was accustomed to the ominous black plume on the east side of town. As day two moved into night two, the fire fighters were subjected to a severe winter storm. Temperatures plummeted into the high teens making for very bad conditions at the fire site. Throughout the night fire fighters continued keeping the other tanks cooled. About 3 a.m. word was received that trucks carrying more foam from Kansas had passed the Limon Port of Entry on I-70, but because of the storm it would be a few hours before their arrival.

At 1 p.m. on day three, Williams, Boots

and Coots, a Texas company that specializes in putting out liquid fires, was brought in by Continental Airlines to protect its \$3,000,000 investment in the remaining jet fuel. Using a special mixture of foam and dry powder applied with specialized equipment they extinguished the blaze in 17 minutes. The Texans had both the knowledge and equipment that Denver fire fighters lacked. Fighting fuel fires is a very specialized job that few city fire departments are equipped to handle.

When the fire was out repairs to damaged valves and piping surrounding the tanks could be made. Until this time the steady leaks from the pipes had fueled the fire and had to be stopped to prevent the fire from breaking out again. In all, the blaze lasted 54 hours, destroyed 4 of 13 tanks and consumed 2.1 MILLION gallons of jet fuel.



Jim Nelson

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EXTENSION BAND DREAM LIST The Ad Hoc Working Group for the 1992 World Administrative Radio Conference has proposed the following extension bands for HF broadcasting (one more reason never to buy a receiver lacking continuous coverage):

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5060-5170	10250-10500	17480-17550
5840-5950	11500-11650	18480-18780
6670-6880	12050-12120	18900-19300
7300-7650	13570-13600	20200-20700
9290-9500	14500-14800	

(Gordon Darling, Papua New Guinea, via *Australian DX News*)

ALBANIA Radio Tirana's coverage of student unrest and street violence was more forthright and detailed than expected, though impossible to determine its objective truth. Newspaper stories from AP often rehash Radio Tirana broadcasts. English and Spanish news seem to be equivalent translations from a common source. News is updated for each broadcast; no program is merely a taped replay of a previous one. English schedule includes: 1830 on 7120, 9480; 2230 on 7215, 9480; 2330 on 9760; 0230 and 0330 on 9760, 11825; 0630 on 7205, 9500 (Bill Peek, NC, *World of Radio & RCI SWL Digest*)

And more to Asia, Australia, Africa: 0430 on 9480, 11835; 0800 on 9500, 11835; 1130 on 9480, 11835; 1400 on 9500, 11985; 1530 on 5900, 11835. Station also offers audio and video cassettes about Albania to listeners, at reasonable cost (Craig Seager, Radio Australia Japanese *DX Time*) One evening Radio Tirana even invited listeners to call the station, 23239 or 24306, but there is no direct dialing and we couldn't get through (Jonathan Marks, Radio Nederland *Media Network*)

ARGENTINA Radio Belgrano is active on 11781 around 1800 (Gabriel Ivan Barrera, Buenos Aires, *Onda Corta*)

AUSTRALIA Radio Australia now suggests North Americans try these frequencies for spillover from Pacific services: 21740 at 0030-0300; 17795 at 0200-0400; 15530 at 0400-0630; 15320 at 0400-0600; 15160 at 0400-0600; 13705 at 0630-0930; 9580 at 0830-1500. Features at 1430: Sunday, *Communicator*; Monday, *Music and Word of Mouth*; Tuesday, *Lane's Company*; Wednesday, *Innovations*; Thursday, *Monitor*; Friday, *Science File*; Saturday, *Interaction* (via Scott Edwards, *DX Listening Digest*)



BANGLADESH Radio Bangladesh's current schedule in English: 1230-1300 on 15200, 17750; 1815-1900 on 9570, 12030 (via Frank Orcutt, NY) Only sporadically heard on 17750, nothing on 15200; at 1815 on 12030 and new 9577 (Marc --, Antwerp DX Club, *BRT Radio World*)

BULGARIA With their QSL, Radio Sofia stated conditions for the Bronze Diploma: after the first QSL you just send 20 reception reports within 23 weeks for a total of 6 QSL cards. Once the diploma is awarded, they will send requirements for Silver and Gold Diplomas upon request. I think I'll skip it (Terry Powers, CA)

CAMBODIA (non) Voice of Democratic Kampuchea, clandestine from China, at 2330 on new 8450 ex-8345 (Bruce MacGibbon, OR)

CAMEROON Radio Bertoua, 4750, from 2123 until sign-off at 2230, part of the time undermodulated (Hans Johnson, MD, *RCI SWL Digest*) Bertoua is recently reactivated after a long absence, English news at 2102, otherwise French on 4750.2 until 2232 (Dave Kernick, British DX Club) 0430-0650 and 1630-2300 on 4750; 0650-1630 on 7165 (Nicholas Vaughan-Baker, *BDXC*)

CHINA Now DX listeners must wonder if Radio Moscow is coming from China, or Radio Beijing from the USSR! Since Dec. 1, the

two broadcasting giants have been swapping five hours a day of airtime to improve coverage, in a two-year renewable agreement. At the outset, Radio Beijing via USSR in Persian, Arabic, Turkish, French; and English to Europe at 2200-2300 on 7170; Moscow via China to Australia, Southeast Asia. Beijing is also working on several more relay swaps in Africa, and North America (BBCM and RNMN)

On the sesquicentennial of the Beijing massacre, Li Dan, who got into trouble for an editorial on Radio Beijing, appeared again on the station for a few minutes. He's taking a year off to study "philosophy" of Marx, Engels, Lenin, Mao, Chou, Liu, at a Party school where the food is bad, but he says he enjoys the company of other people in the same position, and hopes to return to work at the station afterwards (*World of Radio*)

Yes, there is a charge for the Chinese lesson book, actually two volumes, mentioned on page 3 of January *MT* -- it's US\$15 postpaid, from Radio Beijing (*Review of International Broadcasting*)

Regional schedules: Xinjiang PBS, Urumqi, Chinese program: 2305-0210, 0430-0730, 1030-1650 on 3960, 4500, 6100, 7385, and Sundays also on 9560; Mongolian/Kirghiz service 2300-0230, 0530-0730, 1130-1645 on 4220, 4980, 5060; Uighur service 2300-0200, 0330-0730, 1030-1645 on 2560, 3990, 4735, 5800, 7195; Kazakh service 0000-0230, 0530-0700, 1200-1645 on 4330, 4970, 5440. Hunan PBS, Changsha, 2125-1450 on 4990 including English lessons daily at 0030-0100, 1120-1150. In last month's Guizhou sked, make it 7275, not 7225 (BBCM)

COLOMBIA La Voz de Armenia presumably the harmonic on 2080 kHz heard one night at 0335-0423 mentioning Armenia, Todelar net though *WRTH-1990* lists no affiliates on 1040 (Don Moore, MI, *RCI SWLD*)

Military action seems to have put Radio Patria Libre off the air; not heard on 6315-variable; though its opponent, El Pueblo Responde, was still heard, it suffered from jamming; check around 0030-0120 (George Zeller, OH, *A*C*E*)

COSTA RICA A magnitude-7 earthquake Dec. 22 epicentered 5 to 10 km away damaged the Radio for Peace International studios, but not the new transmitter site under construction. No one was hurt. Now new studios and offices may also have to be built. RFPI was back on the air within two days but on a reduced schedule. Once new site is active, morning broadcasts in Spanish and German will be added; weekday afternoons English still starts at 2000 but lasts 4-1/2 instead of 3-1/2 hours before repeating, so most programs are re-timed. Radio New York International, heard Sunday nights on WWCR, also goes on RFPI Saturday evenings, 2230-2430 on 21565, 13630, repeated at 0500-0700 on 13630, 7375-USB (*World of Radio*)

CUBA Radio Granma, Manzanillo, announced and listed on 1590, seems badly off frequency, heard around 1683 more than once, with complete ID at 0130; highly unstable, had to retune plus or minus 300-400 Hz every minute or so; very strong (Don Moore, MI, *W.O.R.*)

Radio Rebelde on 3365 is experimental for local coverage, testing transmitter with vertically polarized antenna, about 500 W RF output, simulcasting AM program; engineers are designing a new high-angle radiator for this. Radio Havana Cuba on 11835 at 0600-0800 uses a curtain of 12 dipoles toward San Francisco. At 1900-2230 to Europe on 15435 is a 30-year-old Brown Boveri 100 kW; there are plans to improve audio quality on 11820 at 0000-0600 which is 250 kW with a beautiful Cuban-built curtain of 16 dipoles, beamed 10 degrees up the east coast. Visitors to Cuba, especially Canadians, are welcome to call RHC collect within Cuba at 75444 for a possible interview. 11760 is the 100 kW Brown-Boveri, two dipoles in phased array to North, Central,

South America at 1100-1700; and reports wanted for the 2300-0500 broadcast. RHC frequencies are accurate to a few Hz, linked to the Cuban hydrogen standard. RHC may conduct SSB tests to celebrate its 30th anniversary in 1991 (Arnie Coro, CO2KK, RHC DXers Unlimited)

Perhaps to avoid the glut of other DX programs, RHC retimed Saturday airings of *DXers Unlimited* to 1915; 0140, 0340, 1540, 0740 UTC Sundays. The Tuesday broadcast is usually a repeat.

(non) La Voz de la Fundacion has expanded to three hours, UTC Tuesday-Sunday at 0100 on WHRI, 9495 and 7315; La Voz de Alpha 66 expanded from 30 to 60 minutes, Monday-Friday 1100 on 11790, 9465; 2300 on 9495, 7315 (Jeff White, Miami, RCI SWL Digest)

CHILE (We alphabetize it here since in Spanish CH is a separate letter following C) Radio Universidad de Concepcion is on 6059.6, ex-6135 daily at 1000-2300. Radio Nacional planned to inactivate 15139.4 but has been heard with religious programs around 0100-0230 daily, and from 1900 Sundays (Gabriel Ivan Barrera, Argentina, *Onda Corta & Radio-Enlace*)

ECUADOR Emisora Gran Colombia, back on 4911 with ID at 0200 (Hans Johnson, MD, RCI SWL Digest) Yes, it's not inactive, on 4910.9 at 0030 (John Ekwall, SW Bulletin, Sweden)

Brent Allred left HCJB sooner than expected because his father has cancer, and wanted to spend as much time with his family in New Zealand as he could (John R. Adams, HCJB)

Contrary to *WRTH-90*, the station heard on 6580 is just the second harmonic of Radio Centro, Ambato, from 3290 (Rich McVicar, HCJB DX Partyline)

EGYPT Voice of Unity, Afghan clandestine from here, heard at 1233-1255 on third harmonic of 12230, 36690 kHz, typical for Egyptian transmitters (Frank Helmbold, Germany, DSWCI SW News)

An English/Arabic broadcast on 10002 kHz mystified some, but it was just Radio Cairo's North American service in Arabic on 9900 putting a spur here and on 9798, UTC Sunday at 0248. Strangely enough Arabic lessons for English-speakers are on the Arabic service, not the English service (*World of Radio*) Lessons are Sunday, Tuesday, Thursday, probably just started over and 300-page textbook likely not free (Bill Peek, NC, W.O.R.)

ESTONIA Tried for Nadezhda on 12055; at 0430 only RMWS was heard, but clear ID at 1630, though weak. Had to rake leaves, so didn't stick with it (Jerry Berg, MA, *Fine Tuning*) Heard on 12056, Radio Hope in Russian is put on by Estonian Interfront, pro-Soviet Russians from Soviet army base on frequency allocated to Soviet navy. Estonians are trying to get it stopped, claiming harmful radiation, but power is less than 1 kW (Radio Moscow via BBCM via RNMN)

ETHIOPIA Voice of Ethiopia on new 9706.4 between 0328 and 0400 (Ernie Behr, Ont., RCI SWLD) Testing with domestic service between 0330 and 2000 (Chris Greenway, Kenya, BDXC)

GABON Several months ago we were hearing VOA instead of Luxembourg on 15350 kHz, but VOA is no help, never giving site IDs. Now something nearby, perhaps not related: Due to uncertain state of Liberia relay, VOA has bought an hour from Africa Number One, 0300 on 15330 and 9655 (RNMN)

INDONESIA RRI Ambon continues on 4864 instead of 4845, heard at 1100 to sign-off at 1132 (Craig Tyson, WA, Radio Australia Japanese DX Time)

IRAQ After losing all its English broadcasts a few weeks before, Baghdad came back as Voice of the Jihad, Voice of the Holy War at 1600-1800 on 15170 (Victor Goonetilleke, Sri Lanka, RNMN) This is to India and Pakistan with same announcer as on the 13660 broadcast at 2100-2300 for Europe, which has all but disappeared (Eugene --, BRT Radio World)

ISRAEL Kol Israel now has a program about the media scene, *Communicating*, on the Tuesday 2000, 2330 (must mean 2230) and 2400 broadcasts. If you can find the station on one frequency, you can

hear a schedule of all the others on Thursdays around 2025, 2255 and 2425.

ITALY Voice of Europe will soon change from 40 meters to 13710 kHz, 10 kW, 24 hours, new QSL card, from P O Box 26, I-33170 Pordenone (*Play-DX*)

IRRS is being reorganized to make licensing more likely: a non-profit organization, Nexus International Broadcasting Association, to provide radio service for associate members. It may take up to two years for authorities to sort through all the applications for SW, FM and MW stations. IRRS now uses 9815 at 0600-1400 weekdays, 0800-1100 on Saturday, all in English; Sundays 0600-1500 in English, Ukrainian, Italian, French, Russian, Spanish; and tests evenings on MW 1602 kHz with same transmitter (Andy Sennett and Jonathan Marks, RNMN)

KOREA SOUTH A personnel shakeup at Radio Korea: Han Hee Joo, English Director, who has attended North American DX gatherings, moved to the often overlooked World News Service in another building. Taking her place is the former news director (R.I.B.)

LAOS (non) Lao National Radio's relay via Moscow of French to Europe at 1100-1130 has expanded from two frequencies to four: 11870, 11960, 15190, 15420. They say IRCs are not accepted in Laos (Gordon Darling, RNMN)

LIBERIA Nigerian forces set up a station on 7275 kHz, identifying as ELBC, and heard one day only at 0800-1000. Then Patriotic Front and ECOMOG forces were reported trying to destroy each other's stations on mediumwave, both called "ELBC" (BBCM)

LITHUANIA Radio Vilnius, 7400 at 2300-2330, good signals with comments like "armed resistance to occupation" and other rhetoric about dis-union with USSR (Tim Johnson, IL)

NEW ZEALAND RNZI changes frequencies so often, this is sure to become a collector's item: a limited edition first-anniversary T-shirt with logo, name in English and Maori, and frequencies! (See p.38, this issue.) Latest schedule, supposedly effective until March but likely out of date already: 1800-2111 UTC Sunday-Friday on 15130; 2111-0705 daily except Sunday on 17675; 0705-1110 daily on 9700; 0000-1110 Sunday on 17675.

NICARAGUA The shortwave situation here: Frank Arana, formerly of the contra Radio Liberacion, now heads Radio Nicaragua (formerly Voice of Nicaragua); says it's off shortwave since it's difficult to get parts, but plans to be back on shortly with 50 kilowatt transmitter covering the world, likely on registered frequency 5950. There are also plans for an unrelated private commercial shortwave station, Radio Nicaragua Internacional. Already on FM 106.1 in Managua and planning 10 kW on 4920 soon is Radio Informaciones de Centroamerica, or Radio RICA. Authorized, but probably not on air now are Radio Miskut, 1 kW for the Miskitos on 5970; and Radio Zinica, Bluefields, 6120 (Jeff White, Nicaragua, RNMN)

OMAN Station is now called Radio Sultinate of Oman, heard on 11730 from 1400 until closing around 1458, then from 1500 past 1800 on 11890, both very strong in Arabic (Ernie Behr, Ont.)

PAKISTAN Radio Pakistan has expanded English broadcasts to Europe: 0800-0848 on 21520, 17565; 1700-1800 on 11570 and new 9775 ex-15605 (Eugene --, BRT Radio World)

PAPUA NEW GUINEA Due to area unrest, Radio North

DX Helper

Macintosh Software W7HR

MUF Map • MUF Plot

Gray Line • Great Circle

Prefix, Zone, Oblast

WWW Alert • CW Drill

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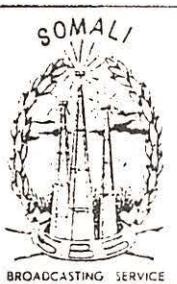
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Shortwave Broadcasting

Solomons cannot use its own transmitter, but has 20 minutes a day via Radio East New Britain, 3385 at 0815, per press report; however, is intermittent, and severe distortion (Gordon Darling, PNG, RNMM)

PHILIPPINES FEBC in English: 0000-0230 (Saturday & Sunday 0200) on 15450; 0900-1100 on 9800, 11845; 1300-1600 on 11850 (Y. Matsushita, Radio Japan *DX Corner*)



SOMALIA Received a friendly letter from Director of SBS Mogadishu, Mohamed Aden Hirs, who enclosed my long-awaited QSL-card for a 1975 report on 9585 kHz. He said most reports never reached the station; the individual who demanded \$50 for QSLs apparently also stole all the incoming mail (Ernie Behr, Ont., *W.O.R.*)

SRI LANKA Deutsche Welle planned to activate its relay once again at Trincomalee. Meanwhile, the Ekala site is being completed by Radio Japan, two 300 kW for NHK, four 10 kW for SLBC. The low-power units are already in use for domestic service; the high-powers tested 9720, 11840 (Victor Goonetilleke, RNMM) Radio Japan's relay was to start Jan. 1 for 6 hours a day, including General Service in English at 1400-1500 on 9535, 1700-1800 on 15210, 0100-0200 on 11840 (Radio Japan *DX Corner*)

UNITED ARAB EMIRATES Abu Dhabi, 21735, heard on a Sunday at 1503-1530 in Arabic with Kuwaiti refugees giving messages, phone numbers to friends and relatives still in Kuwait (Hans Johnson, MD, *World of Radio*)

UKOGBANI Two of the three daily BFBS broadcasts have expanded from 30 to 40 minutes: 0150 on 7125, 9590, 13745; 0920 on 15235, 17830, 21735; 1330 on 15390, 17695, 21735 (David Hermes, *Austrian SW Panorama*) Last one best heard here, though none come in well in Saudi Arabia, per Gerry Bishop, *W.O.R. & R.I.B.* BFBS apparently caved in to religious intolerance in Saudi Arabia by banning Xmas carols even on this broadcast from outside!

While Persian Gulf expenses indirectly threatened RCI, the crisis has led to a 12% increase over the next three years in funding for BBC programming, especially coverage of Asia (*Sweden Calling DXers*)

USA Before the hostage release, VOA "messages from home" service was at 0230 on 792, 1260, 5965, 11905, 15225, 17810, 17895; 0830 on 1260, 11735, 15160, 15195, 21570, 21615, and also on unannounced 21700; 2230 on 792, 1260, 9530, 11905, 11960, 15225, 15445 (Tony Barnett, England, RNMM) Keep this handy in case future situations warrant. Gerry Bishop, Saudi Arabia, notes that VOA-Rhodes on 1260 was bubble-jammed after VOA claimed Iraq was no longer jamming (*R.I.B. and W.O.R.*)

One UTC Monday from 0300 past 0735, instead of usual Sunday news shows on 9334-SSB via England, AFRTS was pre-empted for a raunchy, amateurish, rock show with military references, no time checks, no area codes but phones 455-3770 and 393-1151 for requests, four-letter words from Two Live Crew. The DJs seemed totally unconcerned about complaints to the FCC, which perhaps does not exist where they were. The whole thing would have been written off as a second-rate, one-night-stand pirate were it not for the frequency 9334-SSB. AFRTS normally carries the excellent *Perspective* from ABC News, UTC Mondays at 0806 on 9334, or if not there, on 9242, 10535, 13651 or 16041 (Bill Peek, NC, *W.O.R.*)

KUSW, Salt Lake City, lasted a few days less than three years. Taxes upon taxes were a problem in Utah, and the owners wanted to unload the facility at a net profit. Fortunately they found an eager buyer in Paul Crouch, head of Trinity Broadcasting Network, who revived his teenage interest in ham radio. TBN has a huge and expanding network of high- and low-power TV stations in the U.S. and abroad. Conveniently overlooking the fact that KUSW already sold as much time to preachers as it could, TBN viewers were led to believe this station should be 'saved' from satanic rock music by contributing to

purchasing it. TBN handed over \$2.1 million to Carlson Communications, and the FCC approved the transfer by mid-December. KUSW jocks said a sad farewell on Dec. 15, and the station was reborn as KTBN on Dec. 18, simulcasting TV audio on 15590 at 1600-0200 UTC, new 7510 (conveniently next to WWCR) at 0200-1600. Although already on the air with TBN programming that afternoon, Crouch pretended that evening to throw a switch turning off KUSW and turning on KTBN. Then what looked like another put-on, an explosion of something, claimed to be KUSW's diabolical rock record library. On this the video modulation was so extreme that some TBN outlets were knocked off the air. Naturally a shortwave station over time gets reception reports from many countries, but TBN followers were led to believe that it would now have a pipeline into potential third-world converts, as well as fill in domestic areas unreached by TBN on TV. Taking over as manager in SLC was someone named Skinny -- could this be anyone but former KUSW DJ Skinny Johnny Mitchell? KUSW planned to keep its Shortwave Store open, presumably to unload stock on hand and fulfill orders still coming in. (gh's report, with thanks to John Carson for background information)

Radio Miami International, which now has an application before the FCC, would appreciate short letters of support to the FCC, especially from those who remember Radio Earth and Radio Discovery. Send them to: Mr. Alfred Sikes, FCC Chairman, 1919 M St. NW, Washington DC 20554. Refer to application for international broadcast station Radio Miami International, file number BPIB-900730NB. Thanks! (Jeff White, RMI, *R.I.B.*)

USSR The *Australian Solid Gold Countdown* is heard on Radio Moscow World Service Saturday at 0511 (best on 7310), Sunday 0111 (9895), Sunday 0711 (13705). The 0711 is a repeat of Saturday but 0111 is different; apparent clone of BBC's *Vintage Chart Show*; ends with ad for Vladivostok clinic of Dr. Valery Schorin who promises to cure stuttering, allergies, nervous disorders and all addictions in a single three-hour session (Bill Peek, NC, *World of Radio*)

Audio quality of RM service to western North America has noticeably improved, feeds now using a better grade of phone circuit both for speech and music (Mike Fern, CA, *DX Listening Digest*) See also CHINA

Two very obscure external services apparently come from the same site, same frequency and same time on different days: Adygey Radio, Maykop, Fridays at 1830-1900 on 5905 (7130 from March 3rd), in the Adygey language, also known as Circassian; the same in Kabardin on Saturdays with Kabardino-Balkar Radio, Nalchik; both one hour earlier from end of March due to DST, and both also on MW 1089, which must be nearby Krasnodar. All of these are in the area just north of Georgia, northeast of the Black Sea (BBCM)

Radio Vatandosh, Tashkent, Uzbekistan was heard until 1630 on 5945, 7325, 9540 and new 9725; and from 1730 on 5945 and new 5935, 7285 (Valery Ostroverkh, Karaganda, Kazakhstan, *DX Listening Digest*)

(non) Voice of Orthodoxy is not a clandestine, but a religious station in Russian, programs prepared in France and transmitted via Sines, Portugal; schedule had been Sunday 1600-1700, Saturday and Wednesday 1630-1700 on 9670; so 9690 at 0400 is new (*ibid.*)

ZANZIBAR A roundabout way to QSL Radio Tanzania Zanzibar, 11734: Sunday at 1730-1745 there is a United Nations Radio program in Swahili, so a report, preferably by tape, to UN Radio, Room S-850, New York, NY 10017, should be verified. UN Radio also offers to verify its programs via a variety of other stations (Dario Monferini, Italy, *Play-DX*)

Hungry for more? Devour Hauser's own "DX Listening Digest" and "Review of International Broadcasting." Each \$21/10 issues before postal rate hike, \$40 for both; sample \$2 each. Rates apply North America only; US funds on US bank.

Also catch weekly DX news report on Radio Canada International's SWL Digest; and World of Radio on WWCR, Fri at 2215 UTC on 15690, UTC Mon 0130 on 7520; plus many more times on WRNO, New Orleans and RFPI, Costa Rica; on Connecticut stations WPKN and WHUS; Iowa outlets WOI and WSUI.

Broadcast Loggings

Thanks to our contributors -- Have you sent in YOUR logs?
 Send to **Gayle Van Horn**, c/o Monitoring Times.
 English broadcast unless otherwise noted.

0043 UTC on 9925

BELGIUM: BRT. European Monetary Union Project discussed. (John S. Carson, Norman, OK) Monitored on 13675 kHz at 2345 UTC and 21810 kHz at 1250 UTC. (David Marshall, Sidney, OH)

0100 UTC on 11710

USSR: Radio Moscow. Station ID to national and world news. Special news on Gorbachev's economic reforms in the USSR. Excellent signal monitored to 0115 UTC. (Kelly Bailey, Midland, AR) Audible on 4795 kHz at 0520-0530 UTC. (Mike Hardester, Camp Lejuene, NC)

0100 UTC on 11735

YUGOSLAVIA: Radio Yugoslavia. Station ID with news on Iraq and the U.S. budget deficit. Fair signal quality to 0120 UTC. (Bailey, AR) Audible on 9620 kHz at 0100 UTC. (Nicholas Adams, Newark, NJ)

0130 UTC on 5960

CANADA: Radio Canada International. French. "As It Happens" program. "Listener's Corner" at 2220 UTC in English on 11705 kHz. (Frank Jaffee, Creston, KY) (Frank Hillton, Charleston, SC)

0132 UTC on 11645

GREECE: Voice of Greece. National news to 0142 UTC, followed by Greek music monitored to 0145 UTC. (Bailey, AR) (Jack Davis, Birmingham, AL)

0140 UTC on 7355

UNITED STATES: WRNO. Louisiana State University sports coverage and "WRNO" ID. Recheck with audible signal at 1500 UTC on 15420 kHz. (Carson, OK) (Hilton, SC)

0200 UTC on 9570

ROMANIA: Radio Romania International. News, editorials, and discussion on the Romanian Revolution. "Listener's Letterbox" show at 0239 UTC. Audible on 11940 kHz at 0255 UTC/9510 kHz at 0400 UTC. (Carson, OK)

1205 UTC on 9435

ISRAEL: Kol Israel. Israeli news, and "Travel Magazine" show. Fair signal quality. (Carson, OK) (Craig Young, Fl. Devens, MA)

0236 UTC on 15590

UNITED STATES: KUSW. Rock 'n' roll tunes with station promotions and ads. Audible on 15590 kHz from 1930-0030. (Carson, OK) (Young, MA)

0252 UTC on 3281

MOZAMBIQUE: Radio Mozambique. Portuguese/English. Sign-on xylophone interval signal and multilingual IDs. National anthem and ID repeats. Native African music. Poor signal quality on parallel frequency 3210.5.-ed.

0333 UTC on 7520

UNITED STATES: Pirate-Radio New York International. Monitored to 0402 UTC with "Mailbag Program" at tune-in and music from Police. Ad for video, ID, and news bits. Excellent to decreasing signal quality. (Hardester, Camp Lejeune, NC)

0340 UTC on 15400

UNITED ARAB EMIRATES: UAE Radio-Dubai. Up-to-date news from Baghdad and program feature on the Arab world. Audible at 1300 UTC on 21605 kHz, 1328 UTC on 21605 kHz, and 1604 UTC on 21605 kHz. (Carson, OK)

0410 UTC on 3270

NAMIBIA: Radio Southwest Africa. Venaculars/English. Talk and local interest reports. Fair-poor signal quality with ID and news just barely making it.-ed.

0415 UTC on 9535

SUDAN: Radio Omdurman, Arabic. Fair signal for talk and Koran recitations. ID with mentions of Omdurman into news topics. (Brian Bagwell, St. Louis, MO)

0415 UTC on 11750

BULGARIA: Radio Sofia. National news and excerpts from Sofia newspapers. (Michael O'Neil, Omaha, NE)

0430 UTC on 11755

SWAZILAND: Trans World Radio. Interval signal and English sign-on. Christian music and "Our Daily Bread" program. Interference from Radio Havana on 17760 kHz. (Carson, OK) Monitored on 3200 kHz at 0300 UTC with IDs, talk, and gospel hymns. (Hilton, SC)

0500 UTC on 4774

PERU: Radio Tarma. Spanish. "Radio Tarma" ID at the hour, into talk and local Peruvian music. (Davis, AL)

0503 UTC on 7255

NIGERIA: Voice of Nigeria. African music and report on Science and Technology. Station ID and news reports on the USSR. (Bailey, AR) Radio Nigeria audible at 2235 UTC on 4770 kHz with commentary. (Tim Johnson, Galesburg, IL)

0510 UTC on 13770

GERMANY: Deutsche Welle. Discussions on Soviet/Albanian relations and "European Journal." Monitored on 9545 kHz at 0340 UTC. (Jaffee, KY) (Sam Wright, Biloxi, MS)

0510 UTC on 4000

CAMEROON: Cameroon Radio TV-Bafoussam. English/French. National news in English on parallel 4795 kHz to sports roundup news. African and

French pop tunes to French music titles and chat. (Brian Bagwell, St. Louis, MO)

0702 UTC on 5995

MALI: Radiodiffusion-TV Malienne. French. News coverage on the U.S. and Gulf crisis, followed by music program of African hi-life tunes. (Johnson, IL)

0710 UTC on 6085

GERMANY: Bayerischer Rundfunk. German. Lots of polka and yodel music. German march tunes included to ID. (Johnson, IL)

0739 UTC on 11755

FINLAND: Radio Finland. Press review of current affairs, into French service at 0745 UTC. "Northern Report" heard at 1258 UTC on 15400 kHz. Programming also monitored at 1300-1505 UTC on 21550 kHz. (Carson, OK)

0827 UTC on 6000

BRAZIL: Radio Gualba. Portuguese. Clear station ID to nonstop music of pops and German polkas. (Johnson, IL)

0920 UTC on 4895

COLOMBIA: La Voz del Rio Arauca. Spanish. Colombian music instrumentals to brief local ads and station ID. (Sam Wright, Biloxi, MS) (Jaffee, KY)

0935 UTC on 9660

AUSTRALIA: ABC-Brisbane. Hilarious comedy show to pop music program, and "ABC" ID. (Marshall, Sidney, OH)

1200 UTC on 3315

PAPUA NEW GUINEA: (Admiralty Islands) Radio Manus. Pidgin. ID in progress at tune-in with mentions of city Lorengau. DJ host music show of U.S. pops and Island music to final fade-out at 1220 UTC.-ed.

1310 UTC on 11937.9

CAMBODIA: Voice of People Democratic Cambodia. Very good signal strength for Asian instrumentals. Only slight fades for closing ID at 1315 UTC. (Earl Bailey, Oakland, CA)

1428 UTC on 13625

NORTHERN MARIANAS ISLANDS: KHBI-Saipan. Closing commentary on the American election system, and international news at 1430 UTC. (Hilton, SC)

1440 UTC on 21490

AUSTRIA: Radio Austria International. Discussions on marketing and the Eastern European Block. (Carson, OK)

1524 UTC on 6070

Canada: CFRX/CFRB. Call in talk show and discussion on radio broadcasting. Monitoring active past 1600 UTC. (Carson, OK) (Young, MA)

1530 UTC on 9560

ETHIOPIA: Voice of Ethiopia. Station ID and time check at the half hour. Signal gongs to national and world news topics. Audible at my location for only ten minutes. (Brian Bagwell, St. Louis, MO)

1615 UTC on 21530

PORTUGAL: Radio Portugal. Music from a Portuguese music festival, and station ID, all suffering from fading and interference. (David Browning, Portland, OR)

1615 UTC on 17555

PAKISTAN: Radio Pakistan. Slow-speed news, ID, and frequency schedule. Comments on the Sudanese president visiting Islamabad. (Stephen Price, Conemaugh, PA) Monitored on 11570/15605 kHz at 1730 UTC. (Johnson, IL)

1630 UTC on 15130

MALI: Radio Beijing relay. Classical music of Johann Strauss into American folk music. "Listener's Notebook" show with excellent signal and only minor fading. (Browning, OR)

2045 UTC on 11620

INDIA: All India Radio. Program sign-on with station ID and frequency schedule. International news suffering weak signal quality and interference. (Browning, OR)

2058 UTC on 4935

KENYA: Voice of Kenya. Fair signal but certainly audible for reporting. closing American pop to time pips signal at the hour. Brief international news topics to ID and sign-off anthem to 2108 UTC. (Davis, AL)

2100 UTC on 4904

CHAD: Radiodiffusion National T'Chadienne. French. ID at the hour followed by announcements and native African music. News headlines at 2130 UTC. (Stephen Price, Conemaugh, PA)

2110 UTC on 21610

JAPAN: Radio Japan. International news and "Magazine Hour" show. Moderate fading with background interference making listening more work than joy. (Browning, OR)

2144 UTC on 13660

IRAQ: Radio Baghdad. Easy-listening music to broadcast messages from the American hostages in Iraq. Fair signal monitored to 2200 UTC. (Bailey, AR) (Young, MA) (Stephen Price, Conemaugh, PA)

2210 UTC on 9535

ANGOLA: Radio Nacional. Portuguese. Pop music from Phil Collins and "La Bamba" tune. Male announcer with ID and vibraphone interval signal at 2230 UTC. (Johnson, IL)

2210 UTC on 4765

CONGO: Radiodiffusion-TV Congolaise. French. Announcer's comments and ID. Plenty of African hi-life music with great signal. (Johnson, IL)

2302 UTC on 11790

LITHUANIA: Radio Vilnius. News on the Teacher's Union reestablished and privatization discussed. (Carson, OK) (Young, MA)

Larry Van Horn
c/o MT, P.O. Box 98
Brasstown, NC 28902

The Fascination of the 89th

"Air Force One, this is Andy, your primary is 212 upper and your secondary is now 414 lower."

"This is Air Force One, roger, out."

I can think of nothing that captures the imagination or attention of *MT* Utility World readers faster than hearing communications from Air Force One, Air Force Two or any of the SAM (Special Air Missions) that fly out of Andrews Air Force Base, Maryland.

These aircraft belong to the 89th Military Air Wing (MAW). The 89th is responsible for flying the President, Vice President, cabinet members, congressional leaders, military brass and other VIPs to faraway places and around the United States.

Organized on December 1, 1947, HMX-1 was established as an experimental unit tasked with testing and evaluating military helicopters when rotary flight was still in its infancy.

When President Dwight D. Eisenhower flew in an HMX-1 UH-34 from Newport, Rhode Island to the Naval Air Station, Quonset Point, Rhode Island, in September 1957, it marked the beginning of the squadron's mission of presidential transport and support.

Now each month we feature logs in the logging section that reflect the latest frequencies the 89th aircraft have been heard on. But one question continues to be asked over and over and over by our readers: "Is there a complete list of these frequencies and their designators?" In fact, I recently received a FAX from Martin Hunter in England, asking just that question and for help in figuring out the designators.

I think it is time to put this in perspective so that all our readers understand why a comprehensive list with designators has not and will not be published for these frequencies.

The network associated with 89th MAW communications is called the Mystic Star network. Several years ago, I remember receiving in the mail a very interesting xerox of a United States Air Force instruction regarding Mystic Star and the associated frequencies.

That instruction laid out the handling of Mystic Star frequencies and their designators as well as transmitter sites. The guidelines were quite simple. The frequencies themselves were not classified, but when you added the frequency/designator or designator/transmitting site or frequency/transmitting site, you stepped into the realm of classified Air Force material. The classification of the material was and probably still is "confidential."

The New Air Force One

"This is really something, so much roomier (than the old Air Force One)," said President Bush on the maiden voyage of the new Air Force One last fall.

The President, an old combat flying veteran, even remarked, "I wouldn't understand how to start this thing," while touring the cockpit of the new aircraft.

The new Air Force One, dubbed by some a "flying Taj Mahal" stands six stories high and is equipped with a secure worldwide communications system and anti-nuclear defense shield. It has two galleys able to serve 100 meals at a sitting.



Nothing captures the attention of ute monitors quicker than VIP comms from AF1 or 2.

The aircraft is painted in the same blue and white color scheme of its predecessor 707 aircraft.

When the President is seated at his desk in his rectangular "office in the sky," he has his seat belt on. The belt buckle is engraved with the presidential seal.

The new state of the art communications system hasn't been all it's cracked up to be. During one recent flight, wire service reporters attempting to make in-flight calls to dictate stories were broken off three separate times during their connections.

The new plane, built by Boeing, can hold a crew of 23 and 70 passengers, about double the capacity of the old 707s. Its wing span and deck space are 195 feet and 4,000 square feet respectively, compared with 145 feet and 1,260 feet for the old ones. It also has a complete medical unit, a built-in stairs and baggage loader.

The new presidential planes -- there are two of them -- will nest at their new hangar at Andrews AFB at a cost of \$47 million. The other 747 is due for delivery at Andrews in June of this year.

RTTY Reporting Parameters

David Bogart in El Campo, Texas, dropped a note to let us know how much he enjoyed the October Persian Gulf issue. Thanks for the nice words, David. We both appreciate your vote of confidence.

He also asked if I could require that all RTTY loggings from you readers out there include: Mode (Baudot or other), shift, baud rate, polarity and hi to lo tones.

David, you have hit a sensitive topic among those of us that publish hobby logs -- that of RTTY logs.

About the only useful information that remains constant for each station, other than frequency, is the shift and baud rate. Polarity (normal or reverse) is a function of the receive position on your receiver and can vary from receiver to receiver. It is not a good idea at this point to include polarity information. Hi and Lo tones pretty much fall into the same category as above. Therefore in the future my policy is to include the following information for RTTY logs to this column:

Frequency (in kHz)
Station name
Call sign (if any)
Location
Shift (Hz) and
Baud rate.

I might also point out that even shift and baud rate does vary from time to time by a station on a frequency. In fact, I have seen stations even change shift and baud rate mid-broadcast.

The best suggestion I can give you, David, is to read the instruction manual for your demodulator, get real familiar with the operation and start tuning in everything. Practice makes perfect in tuning in digital signals in the utility bands.

This Letter "Warrants" Attention

We recently received a letter from Bill Hale in San Marcos, California. Bill is a new subscriber to *MT* and the feature editor for a mediumwave club, the NRC (National Radio Club).

"As a feature editor for the NRC DX News," says Bill, "I am keenly aware of the need for accuracy in content, character and accuracy of anything that appears in print."

Addressing his comments to publisher Bob Grove, Mr. Hale goes on to say that in a previous issue I addressed the chief of Navy-Marine Corps MARS, CWO4 T. Fisk, as "warrant" two times (actually I did it three times). Bill says, "The proper address for CWO4 Fisk should have been either 'mister' or 'chief'."

Bill, I share your interest in accuracy. According to the Navy protocol guide, however, warrant officers are addressed as either "warrant" or "sir." "Mister" went out of style years ago and many naval officers become clearly irritated when some of the old-timers use the term.

A warrant officer in the Navy is not addressed as "chief," either. That term is used for the E7-E9 pay grades. Want to make that old crusty Boatswain Mate Chief's day? Call some warrant officer "Chief." You'll put him in the ozone.

Cosmos Satellites

Jim Hale up Arkansas way wants to know "How difficult is it to hear Cosmos Recon satellites on 19.989, 19.995 or 39.978?"

Jim, probably more difficult here in North America than in Europe. The only time the Soviets turn on the aforementioned beacon channels you referred to is during the recovery phase of the recon mission, when the film canister is being returned to earth. They only turn these beacons on as an aid to recovery forces located in the payload.

Unless you have propagation to Europe during the recovery phase, I doubt you will hear much, if anything. Of course, with the high sunspot cycle we have right now, anything is possible so it might bear watching.

One frequency that is worth watching is 19.542 kHz for transmissions from Soviet nuclear powered ELINT (Electronic Intelligence) satellites. At the later stages of these satellites, the nuclear core splits away from the rest of the payload and is boosted to a higher and supposedly safer orbit to let the radioactivity decay naturally before it reenters the earth's atmosphere. The beacon you hear on 19.542 MHz is from the boosted section. By tracking this beacon you can tell if a successful separation has occurred and the nuclear waste put

into a higher orbit.

Most people do not realize the amount of nuclear waste in 600 km orbits above our heads, but there is a lot up there. Eventually, this stuff will return to earth.

Geoff Checks in Again

Geoff Halligey has checked in again from England with some interesting information. Geoff says the new edition (11th) of ITU's "List Of Callsigns of Fixed Stations" is now published. Slightly cheaper than the 10th edition -- now 98.00 Swiss francs.

Greatly reduced in size (only 231 pages compared with 888 pages of the 10th edition), this has been achieved by omitting all frequencies except one, which have the same call sign. The one included has an asterisk to indicate that there are other frequencies with the same call sign.

Thus: NAM, NAR, NAU, for example, have only one entry: all the "N" call signs occupy just two columns instead of some 50 pages as in the 10th edition.

Whereas stations that have a call sign including a number for each frequency are listed in full, thus LTY in Argentina runs through from LTY 200 to LTY 928, with a different frequency for each number, nearly five columns of them.

If you purchased the 10th edition and are expecting something bigger and more complete for the 11th, you might just be disappointed. I should say so, Geoff, looks like another good source of information has bit the dust, buyers beware. We might all want to write to the ITU and let them know our dissatisfaction with the new changes.

Geoff also passes along that a favorite target for ute listeners, Bermuda, has left the airwaves. VRT has closed all of its CW, Telex, and USB voice channels and can only be heard on VHF Channel 16 now. Many thanks to Geoff for the always informative report.

New Development in Shortwave Comms

Wilfred Gregson II, a new reporter to this column, recently got invited by an area Motorola representative to check out the new Motorola shortwave box. Called the "Rapid Deployment Radio," it comes in a rather small suitcase.

The top comes off and holds the antenna and tuner. The bottom is the radio itself. The controls consist of an on-off volume knob, a key pad (0-9 # * keys), three other buttons and a line of alphanumeric display and nothing else unless you count the mic, key and earphone jacks, plus power and antenna/antenna tuner connections.

Besides giving phase distortion-free Single Sideband comms 2-30 MHz (we talked to the factory in Illinois) it sounded better than some FM circuits I've used.

It is what this box does that is fantastic.

Using the key pad you load as many as 20 different frequencies into it and every half hour or so it calls every other box in your net on each of the programmed frequencies. When contact is established, the box will make a signal/noise measurement and store the results, all in a second or so. When you want to actually talk to someone, the box knows the best frequency to use.

That's real neat, Wilfred, and we appreciate the look inside "The Box."

Well, that's it for this month. It's now time to check out what you have been hearing in the world of utility listening. Without further ado...

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Faxsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification	NDB	Non-directional beacon

216.0 CHX-Cholix, Mexico, NDB in MCW at 1045. (Homuth, AR)
 274.0 CH-Christchurch, New Zealand, NDB in MCW at 0925. (Trigg, NZ)
 286.0 CC-Cape Campbell, New Zealand, NDB in MCW at 0927. (Trigg, NZ)
 294.0 LB-Steeplehead, New Zealand, NDB in MCW at 0929. (Trigg, NZ)
 BMC-Brigham City, Utah, NDB in MCW at 1030. (Homuth, AZ)
 302.0 L-Los Angeles Breakwater USCB NDB in MCW at 1035. (Homuth, AZ)
 305.0 RO-Roswell, New Mexico, NDB in MCW at 1031. (Homuth, AZ)
 329.0 TAD-Trinidad, Mexico, NDB in MCW at 1043. (Homuth, AZ)
 334.0 KS-Ashburton, New Zealand, NDB in MCW at 0943. (Trigg, NZ)
 338.0 DN-Dunedin, New Zealand, NDB in MCW at 0944. (Trigg, NZ)
 350.0 LE-Raleigh Durham, North Carolina, NDB in MCW at 0157. (Hardester, NC)
 356.0 NCA-MCAS New River, North Carolina, NDB in MCW at 0208. (Hardester, NC)
 PB-West Palm Beach, Florida, NDB in MCW at 0209. (Hardester, NC)
 358.0 NY-Hornby, New Zealand, NDB in MCW at 0949. (Trigg, NZ)
 359.0 BO-Bolse, Idaho, NDB in MCW at 1048 fade-in. (Homuth, AZ)
 360.0 ZIN-Kingston, Jamaica, NDB in MCW at 0215. (Hardester, NC)
 365.0 CKK-Miami, Florida, NDB in MCW at 0220. (Hardester, NC)
 367.0 HA/HAO-French Polynesia, Dash after 2 CW IDs in CW not MCW. Heard around at 1030. (Homuth, AZ)
 368.0 SIR-Rawlins, Wyoming, NDB in MCW at 1029. (Homuth, AZ)
 370.0 NP-New Plymouth, New Zealand, NDB in MCW at 0951. (Trigg, NZ)
 373.0 UQN-Unid NDB heard at 0226 in MCW. (Hardester, NC) *Probably Cuban, Mike.-Larry*
 374.0 BU-Burnham, New Zealand, NDB in MCW at 0954. (Trigg, NZ)
 375.0 TGE-Guatemala City, Guatemala, NDB in MCW at 0228. (Hardester, NC)
 382.0 WU-Wanganui, New Zealand, NDB in MCW at 0958. (Trigg, NZ)
 382.0 UPA-Punta Alegre, Cuba, NDB in MCW at 0232. (Hardester, NC)
 385.0 EMR-Augusta, Georgia, NDB in MCW at 0234. (Hardester, NC)
 396.0 ZBB-S. Bimini, Bahamas, NDB in MCW at 0241 - nearly overloaded the receiver. (Hardester, NC) *Same here, Mike. They are loud.-Larry*
 412.0 CTZ-Clinton, North Carolina, NDB in MCW at 0250. (Hardester, NC)
 417.0 EVB-New Smyrna Beach, North Carolina, NDB in MCW at 0252. (Hardester, NC)
 424.0 RVJ-Reidsville, Georgia, NDB in MCW at 0253, weak but steady. (Hardester, NC)
 432.0 MHP-Metter, Georgia, NDB in MCW at 0256. (Hardester, NC)
 1610.0 WXK 790-Phoenix Sky Harbor International Airport, Arizona, with special announcement about new Barry Goldwater Terminal Four. Runs 25 watts into leaky coax. I have logged this one over 150 miles away under good conditions. (Homuth, AZ)
 1615.0 OR-Ohura, New Zealand, NDB in CW at 0919. (Trigg, NZ)
 1640.2 7V NDB, weak but fade free signal indicating groundwave. None of the local hams I've talked to know who is running this. at 0943. (Homuth, AZ)
 2899.0 Gander ATC working Clipper 467 in UDB at 0305 for a company message. (Russ Hill, Oak Park, MI)
 3108.8 Tracon/VA-27/VC-97 and Jacksonville area locations discussed, request for a gaggle (*that's a bunch-Larry*) at 0700 for beach was confirmed promising six aircraft from same group as today. Baker boy was one station, officer at other station called by name, whole discussion in clear in USB at 2330. (Burghardt, NJ) *Sounds like a carrier fly-off to me, Bill.-Larry*
 3187.0 Liberty Star (NASA SRB Recovery Vessel) working DOD Cape in USB at 0903. (Alexander, PA)

3365.0 Bloodhound 39 working Cape Radio at 0934 in USB. Variety 1 working Bloodhound 39 in USB at 0948. (Alexander, PA)
 4443.0 Spanish male five-digit number station at 0208. (Hill, MI)
 4520.0 Bloodhound 39, King 1 working Cape Radio in USB at 1021. (Alexander, PA)
 4779.0 German female five-digit number station interspersed with music box tune at 2103. (Mr. Glasgow, Scotland)
 4790.0 Czech female five-digit number station at 1925. (Glasgow, Scotland)
 4822.0 German female five-digit number station at 2141. (Glasgow, Scotland)
 5185.0 German female five-digit number station at 2147. (Glasgow, Scotland)
 5246.0 CGC Harriet Lane/USS Vreeland working Cape Radio in USB at 0954. (Alexander, PA)
 5320.0 NMG-COMSTA New Orleans, Louisiana, working USCGC Buttonwood, WLB-306 at 0319 in USB then shifted to 6961.0 kHz. (Hill, MI)
 5432.0 Unid station with KY-28 "Parkhill" secure voice traffic in USB at 0339. (Tim Tyler, Ypsilanti, MI) *Welcome aboard, Tim. -Larry*
 5436.0 CGC Harriet Lane working Cape Radio in USB at 0748. (Alexander, PA)
 5460.2 USIA-Rabat (Tanger), Morocco, with conclusion of English news and request to standby for Arabic files in two minutes (heavy AC hum). RTTY 435/75. (Bilodeau, IL)
 5692.0 CG 6592 working CG Detroit Air for weather at 2355 in USB. CG Rescue 2793 calling Traverse City Air at 0010 in USB. (Hill, MI)
 NOP-USCG COMSTA Brooklyn, New York, caught end of transmission securing guard for aircraft 78K at 2332 in USB. (Neal Perdue, AL)
 5775.0 Liberty Star working Cape Radio in USB at 1102. (Alexander, PA)
 5810.0 King 1 working Rescue Ops in USB at 1009. Bloodhound 39 working DOD Cape in USB at 0901. Jolly 1 working Cape Radio in USB at 0914. Victor 1 Charlie working Bloodhound 39 in USB at 0923. (Alexander, PA)
 6433.0 Unid AP news, medical topics and world news headlines at 0316. VFT 85/75. (Bilodeau, IL) *Maybe GYA-Royal Navy London.-Larry*
 6453.5 Unid FAX station with significant wave chart of the Pacific at 0501. FAX 120/576. (Bilodeau, IL) *Hmmmm. Anybody know who this is? I have no listing.-Larry*
 6496.0 NMN-USCG Portsmouth, Virginia, COMSTA with Cw marker and SITOR-A Idler at 0412. (Fernandez, MA)
 6515.7 KFB-Palm Beach, Florida, working the Tropic Rain/Mist/Night/Sun with position reports at 1020 in USB. (Ray McCarthy, NY)
 6640.0 West coast fishing boats with lot of profanity about government regs on fish size and having observers aboard. Said they (observers) would make good shark bait at 0215 in LSB. (TSgt Skip Harwood, Beale AFB, CA) *Welcome aboard, Skip. Nice to have another mil guy around. Wonder if any government fishery folks read this column?-Larry*
 6675.0 English female five-digit number station at 2121. (Glasgow, Scotland)
 6735.0 SLHFB "X"?-tuned into a moderately fast CW on this frequency with signal fair at 0630. The CW ceased about a minute after tune-in and commenced transmitting the letter "X" at a rate of 60 per minute. Klingensfuss list Prague, CFL-7 no listing SUSL has unknown with continuous "X." (Hardester, NC) *Mike, I only show the same listing as SUSL.-Larry*
 Same station as above heard several nights best when darkness to my east. (Chip Veres, Hollywood, FL)
 6770.0 Female repeating number groups in unidentified Slavic language in USB at 0326. (Tyler, MI)
 6835.0 NMG-COMSTA New Orleans, working Air Station (*that's a long haul -Larry*) in reference to a rescue on the Chinese vessel Tiaghoushai. Got the USS Lexington involved and they sent a helo Foxfire 401 to the scene. At 0224 in USB. (Michael Lennon, Grand Rapids, MI) *Welcome aboard, Mike, neat log, neat frequency.-Larry*
 6845.0 Unid language male five-digit number station at 2110. Numbers were: Chinch, Uno, Shapay, Dri, Nowa, Patru, Zero. Fast tune played twice between messages. Ended with "termina" spoken three times. (Glasgow, Scotland)
 6853.0 Two unid males in English using XXXX-rated language in USB at 0157. (Hill, MI)
 6932.0 Spanish female four-digit number station at 0320. (Harwood, CA)
 6933.5 Spanish female four-digit number station at 0012. (Tyler, MI)
 7366.0 IIQHQB (net control?) in USB at 0050 with roll call check in. Other stations noted: IIQYGR, IIQWIL and IIQER. Net control at fair level and other stations ranged from fair to poor. Who? (Hardester, NC) *Good question, Mike, readers?-Larry*
 7396.8 AWS-Offutt AFB, NE with 850/75 RTTY weather at various times. (Ed Flynn, CA) *Ed, according to Scott, these guys don't have a schedule. And yes, Gayle and I will be at the Monitoring Times convention next year, good Lord and Saddam willing.-Larry*

7405.0 Someone calling "Hello BQ, calling all buggers, this is KK6IA," ended with "Well, crap, it would help if I were on the right band. (Harwood, CA) *Skip, you win the unusual log of the month award, in fact this one is bizarre.-Larry*

7535.0 Norfolk SESEF radio checking various HF radios aboard the USNS Pawcatuk (T-AO-108) and quick radio check for USS Scout. (Tyler, MI)

7590.0 English female three/two digit number station at 2019. (Glasgow, Scotland)

7650.0 CW five-digit number station heard at 2120. (Glasgow, Scotland)

7714.0 TKJ-Douala, Cameroon, with RY test tape at 0503. RTTY 397/50. (Bilodeau, IL)

7890.0 ROO3-Novosibirsk, USSR, with coded meteo at 0130. RTTY 476/50. (Bilodeau, IL)

8765.4 Unid shore station providing phone patches for ships (operator had British accent and was not WOO). P3/D2 requested line to Syria, none available. A9FL had trouble hearing shore station. (Preston Sewell, NJ) *Probably Portshead Radio in UK, Preston.-Larry*

8880.0 German female five-digit station at 2131. (Glasgow, Scotland)

8970.0 Possible fishing fleet around 0500 in LSB using calls like Fox 574/Quebec 413/ Quebec 144, etc. (Harwood, CA) *Probably Is, Skip.-Larry*

9017.0 Geometric and Rain Sale in USB at 1909 on PACCS/WWABNCP primary frequency. (Tyler, MI)

9023.0 Hit Song/Geranium/Slide Car/Mischief/Steersman with major NORAD/JCS exercise. Clear voice, KY-28 secure voice and KL-43 secure data traffic. Also on 263.825 FM FLTSATCOM with Red Dog fighters. In USB at 1430 on CINCNORAD ABNCP frequency. (Tyler, MI)

9055.0 English female five-digit number station at 2035. (Glasgow, Scotland)

9121.0 02D, E68 and E92 running data and using voice coordination in USB at 1832. (Tyler, MI)

9150.0 English female five-digit number station at 2131. (Glasgow, Scotland)

9230.0 Spanish female five-digit number station at 0524. (Fernandez, MA)

9318.0 Russian male five-digit number station at 2124. (Glasgow, Scotland)

9325.0 German female five-digit number station at 2040. (Glasgow, Scotland)

9500.0 Sledge, Sledge 01, Breastbone, Nebula, Lawyer, Parent, Drawing Card, Harris, Pinetree and Langtree running traffic on procedural messages and correct operating procedures in USB at 1930. (Johnson, IL) *Sounds like a military training net, Tim. Not sure who however, I don't have anything in the database or references.-Larry*

10069.0 Berne Radio-Berne, Switzerland LDOC working TWA aircraft with position/flight data report in USB at 0242. (Fernandez, MA)

10075.0 German female five-digit number station at 2043. (Glasgow, Scotland)

10640.0 CW five-digit number station heard at 1949. (Glasgow, Scotland)

10676.0 USAF-SAC? A male with 10 count then "Communications, out" with standard SAC beep tone at end of transmission. (Fernandez, MA)

10780.0 King 2 working Cape Radio in USB at 0957. Alert 1 working Cape Radio in USB at 1050. USS Vreeland working Cape Radio in USB at 0745. (Alexander, PA)

11035.0 English female five-digit number station at 2223. (Glasgow, Scotland)

11056.0 SAM 28000/Air Force One on ground in Chicago, enroute Battle Creek, Michigan, then Andrews in LSB at 2140. (Tyler, MI)

11059.0 Air Force Two working Andrews AFB in USB at 2042. (Tyler, MI)

11108.0 German female five-digit number station at 1841. (Glasgow, Scotland)

11214.0 Idol 31 working Idol 32. Some sort of AWACS platforms -- possibly E-3, E-2C or J-Stars aircraft. Radio operators sounded like USN types in USB at 0536. (Tyler, MI)

11222.0 Illegal fisherman type comms. Man was on boat, wife/girlfriend was on land. Canadian accents at 0245 in LSB. (Tyler, MI)

11310.0 Fisherman on west coast (References to San Diego) having a lot of bad luck in LSB at 0025. Strange frequency and mode for fisherman, isn't it? (McCarthy, NY) *Yes, Ray, these guys are showing up all over the spectrum.-Larry*

11318.0 Russian VOLMET-Kuibyshev (female) on with weather in Russian, followed by other stations in various locations in USSR in every five minutes. (Fernandez, MA)

11400.0 Russian male five-digit number station at 2101. (Glasgow, Scotland)

11415.0 English male five-digit number station at 2009. (Glasgow, Scotland)

13306.0 Exxon 99 (KC-10) working New York ATC with position report and aircraft enroute to Robbins AFB, Georgia. (Hill, MI)

13311.3 Fishing boat outlanders in LSB discussing fishing ops off NE US coast. the aero bands are getting pretty abused lately with these types of comms. (Fernandez, MA) You bet they are, Bill.-Larry

13333.0 A siren sound, then net call-up. Call signs included ZWG, ZQBY, 480G, BCUE, and GOAW. Some traffic, but signals distorted. Lasted for about

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The completely revised new edition includes a frequency list with 18233 frequencies, and a call sign list with 3376 call signs. Up-to-date schedules of FAX meteo stations and RTTY press services are listed both alphabetically and chronologically. Abbreviations, addresses, codes, definitions, explanations, frequency band plans, international regulations, modulation types, NAVTEX schedules, Q and Z codes, station classes, telex codes, etc. - this reference book lists everything. Consequently, it is the ideal addition to the World Radio TV Handbook for the "special" stations on SW!

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Germany

ten minutes in USB at 0059. WHOZIT? (Hill, MI) *Sounds like it might be the Speedbird LDOC in London.-Larry*

13737.0 5YD7-Nairobi, Kenya with aviation notams and weather for Nairobi at 0130. Severe QRM from AM station. RTTY 203/50. (Bilodeau, IL)

14607.2 Interpol messages from unid station at 0308 using SITOR-A. ID and descriptions of wanted persons. (Norm Anderson, Santa Ana, CA) *Welcome aboard, Mike, please report often.-Larry*

14818.0 NNNOCVG-USS Eisenhower working stateside stations with phone patch traffic at 2330 in USB. (Bill Barnes, VT)

16202.0 STK-Khartoum, Sudan, with RY test tape at 0321. RTTY 782/50. (Bilodeau, IL)

16395.0 English female four-digit number station at 1611. (Glasgow, Scotland)

16603.0 Two males with British accents in comms about that sounded like oceanographic electronic equipment repairs. Some gear was sent back from the states with high price tags on them and discussion on getting someone with proper background in electronics to repair and set up the gear in the future. Lots of mention of "waves" (waveforms?) by number. Sounded like a ship and shore station. No IDs were given except first names when they cleared in USB at 2234. (Fernandez, MA)

18180.0 KPA14-Israeli Moshav number station at 1510. (Glasgow, Scotland)

20198.0 Space Shuttle Discovery and Houston Mission Control transmissions in LSB at various times. (Kokinda, OH)

20737.0 Phone patches between military servicemen in Saudi desert and loved ones back home in USB at 1823. Stateside station IDed as VMD. (Johnson, IL) *Probably Air Force MARS, Tim.-Larry*

20845.2 RFQP-Unid French military station. Both A and B channels active with a mix of encryption and plain text messages in French at 1850. ARQ 96 baud. (Bilodeau, IL) *French Forces Djibouti.-Larry*

20868.0 Spanish female four-digit number station at 0027. (Fernandez, MA)

20946.0 8BY-Unid station with VVV 8BY marker followed by what looked like channel numbers or coded frequencies. Location unknown, perhaps Indonesia. CW at 1850. (Bilodeau, IL) *Probably.-Larry*

24871.7 Unid French military station with "controle de voie" test message at 0325. AEQ-E3 358/96. (Bilodeau, IL)

The Scanning Report

Bob Kay
c/o MT, P.O. Box 98
Brasstown, NC 28902

Scanning in the Hole

As we descend the concrete stairs, the sunlight and the familiar noises of the city are somehow absorbed, eliminated. In the few minutes that it takes to reach the tunnels, we are alone, underground.

The New York City Transit Police refer to this place as, "down in the hole" and as you probably guessed, we are standing in the New York Subway.

If you're worried about our safety, relax. There hasn't been a wild west style shoot out down here for at least two weeks. If you see someone running, get out of the way. Bandits routinely rob people on the surface, and then run through the subway to escape the regular police. Fires in the subway, are another common occurrence. If you see something ablaze, don't panic—it happens all the time.

Need to call a cop? Good luck. Finding a public phone in working order is nearly impossible. Vandals cut the pay phone lines on a regular basis. If you could use the phones, the Transit Police probably wouldn't come to your rescue. Why? Because the radio system down here doesn't work!

The Transit Police radio communication system predates the 1940's. When a Transit Police officer uses his 2 watt portable radio, the radio signals are supposed to be picked up by antennas above the tracks.

The antenna is a thick length of cable that carries the radio signals to a junction box. The box sends the radio signal over a wire to the Transit Police Dispatcher. Fifty years ago, the system probably worked reasonably well. In today's world, the antenna above the subway tracks can't pick up signals from more than 20 feet away. This causes numerous "dead spots," where cops can't send or receive radio messages.

To make matters worse, the cops in the subways can't communicate directly. Their small, 2 watt radios simply don't have sufficient power.

Needless to say, the scanning action can be sizzling hot -- if you can hear it. Keep in mind that subway communications are delivered to the dispatcher via wired lines. If you're on the surface, it may not be possible to hear the transmissions from the transit police on foot patrol. That's why I brought you guys down into the subway. Hopefully, we can hear both sides of the action and have some fun. If you're not afraid to hang around, here are the 7 basic transit police frequencies:

Base	Mobile	Area of Use
---	160.260	-----
F-1	160.305	151.310
F-2	160.500	151.190
F-3	160.965	151.145
F-4	160.905	151.340
F-5	160.305	160.305
F-6	160.695	160.695



The sewers of New York are guarded by the Teenage Mutant Ninja Turtles; But who will protect you if you venture into the subways?!

Although subway scanning can certainly be exciting, there are many additional agencies in New York that can be monitored. Here's a small sampling of the frequencies that I have for the New York area.

Railroads

160.395	Coney Island Yard
160.485	S.I.R.T Maintenance of way/yards
160.845	Yard operations
161.190/158.880	Division A
161.505/158.775	Division B-1
161.565/158.805	Division B-2
470.3875	Malntenance--active during fires & emergencies
470.4375	Staten Island Rapid Transit Command Center
470.4875	Maintenance of way

Transit Authority Bus Operations

30.820	Flatbush Bus Depot
30.860	East New York Bus Depot
30.90	146th St Bus Depot
31.02	132nd St Bus Depot
31.06	Jamaica Bus Depot
31.12	126th St Bus Depot
31.14	Kingsbridge Bus Depot
44.56	Base Radio Bronx surface authority
44.58	Base Radio Repair and supervision
44.60	Supervisors Staten Island
158.775	54th St Bus Depot
161.175	Fresh Pond Depot
161.250/160.230	Staten Island digital
161.355	Digital data
161.520/160.530	Staten Island voice
470.4125	Queens Village Bus Depot-Voice
470.4625	Queens Village Bus Depot-Data

Future Transit Authority Frequency Plan

Base Transm	Base & Remote Receivers
161.190	158.880
161.505	158.775
161.565	158.805

Transit Authority Portables

151.340/160.905	Police/Manhattan
151.190/160.500	Police/Bronx
151.145/160.695	Police/Queens
151.310/160.305	Police/Brooklyn
158.880/161.190	Train/Division A
158.775/161.505	Train/Division B-1
158.805/161.565	Train/Division B-2
160.845-----	Train/Yard
161.190/158.880	Train

As you scan the above frequencies, here are some of the more common codes that may be monitored.

Adam	- Sergeant	CPO	- City police officer
A/O	- Arresting Officer	DD	- Detective division
Baker	- Lieutenant	TP	- Train patrol
Charlie	- Captain	TPO	- Transit police officer
Central	- Dispatcher for RMP's	Radio	- Dispatcher for underground/portable units

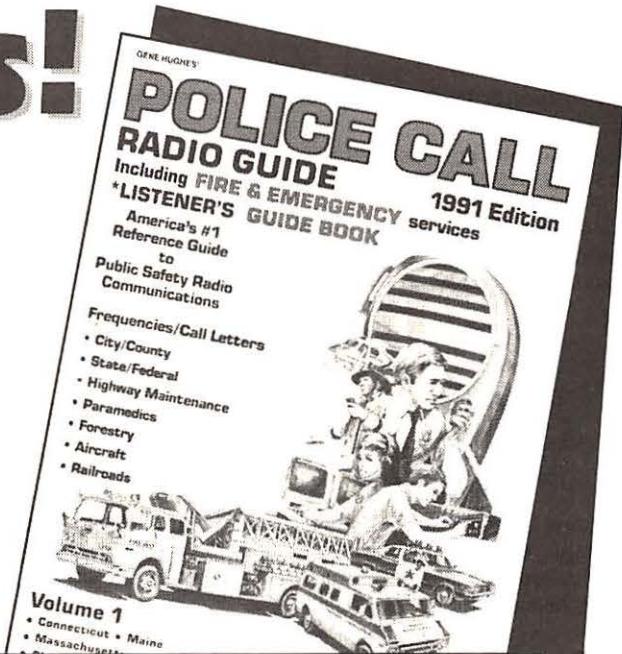
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158.880/161.190 Command
161.505/158.775 Train
158.775/161.505 Command
161.565/158.805 Train
158.805/161.565 Command
Triboro Bridge and Tunnel Authority: 453.550 Operations
American Society for the Prevention of Cruelty to Animals, (ASPCA): 155.265 Rescue, Humane Law Enforcement, Animal Port

Cemeteries:

463.350 Catholic (KZM-567)
151.745 Cypress Hills (KNCA-582)
151.775 Evergreen (WXU-416)
154.570 Flushing (KO-9964)
30.920 Lutheran (KFZ-233)
151.745 Mount Olivet
154.600 Mount Zion (KA-67891)
151.805 Oceanview (KNAM-330)

Well gang, that's it. If our visit to the subways of New York made you nervous, I apologize. However, you should consider yourself lucky. I had originally planned to visit the underground sewers, and look for the Teenage Mutant Ninja Turtles. Cowabunga, dudes!

Treasure Hunt

This is your last month to win a frequency counter from Opto Electronics. As most of you know, Opto is the leader in high tech, highly sensitive frequency counters. For the January/February Hunt, I have one 1300 H/A and one, top of the line UTC 3000.

The 1300 H/A is probably the most popular counter on today's market. It features 1 megahertz to 1.3 gigahertz coverage, rechargeable batteries, high sensitivity, and it has a factory installed internal amplifier.

The UTC 3000 is an advanced, hand held frequency counter that can measure between 10 Hertz and 2.4 gigahertz. The instrument is superbly crafted, and it features a "bargraph," and

a "hold button."

The bargraph is a 16 segment display that reacts to signal strength. As the signal becomes stronger, the bargraph displays additional segments. Generally, if three segments are showing, there is a signal present that can be measured. With a little practice, the bargraph can be used to guide the user to the strongest point of the transmitted signal. And as we all know, that particular location will provide us with our best chance to catch a frequency.

Pressing the hold button will cause the UTC 3000 to "freeze" the display. In the past, you only had a few seconds to memorize the captured frequency. With the UTC 3000, you can hold the displayed frequency for as long as the batteries hold a charge.

To win the UTC 3000 or the 1300 H/A, use the November 1990 issue of *MT* to answer the following questions.

1. What is the toll free order line for Opto Electronics?
2. Name the scanner radio that features Hyperscan.
3. Provide the page number that features a picture of a clown.
4. In what column can the word, "Heightophobia," be found?
5. Provide one NIS frequency for NAS, Dallas, Texas.

When you send your entry, don't forget to observe our new rules. FAX entries are not allowed. Multiple entries are okay, but you must send them separately. Post card entries are encouraged and they also save you postage.

The UTC 3000 will be awarded to the first name that is randomly selected as a prize winner. The 1300 H/A will be awarded to the second name that is selected. Happy hunting!

Frequency Exchange

Monitoring Times editor Larry Miller just received the gas bill for last month's frequency exchange. You probably

The Scanning Report

remember that we visited California and then went to Florida. This month, I will attempt to limit our visits to a more specific area.

Since we started the column in New York City, let's go back to the Big Apple, and check out a few 800 megahertz frequencies:

Transit Authority Dream Frequencies (Licensed but not implemented)

854.8625 854.9125 855.1125 855.3625 855.6125 855.8625 855.9125
855.1625 855.4125 855.6625 856.7375 857.7375 858.7375 859.7375

From New York City, we travel only a few miles to the city of Danbury, Connecticut. Dave Smith lives in the area, and here are a few of his favorite frequencies:

42.640	CT Highway Patrol speed traps
37.90	Danbury Highway Maintenance (Snow storms)
464.925	Danbury Hospital Security
473.3125	Danbury SWAT frequency
460.550	SWAT paging
464.675	Fair Mall
154.875	Motor Vehicle Dept., Main repeater
153.775	Office of Emergency Management. Tests on Wednesday/9AM
45.86	Statewide Police Hotline

As most of you know, South Carolina is just a little south of Danbury, Connecticut. Since it won't take much gas to get there, let's stop in and check out a frequency contribution that was sent in anonymously.

39.98	South Carolina HP
42.06	:
42.08	:
42.10	:
42.12	:
42.14	:
42.26	:
42.34	:
48.18	Savannah Electric
119.05	Marine Corps Air Station Beaufort tower
154.025	Georgia State Prisons
160.590	Seaford System rail road
161.10	:
161.265	:
165.2375	Bureau of Customs - Savannah

The State of Texas is just Southwest of South Carolina. Heck, you can stand in South Carolina and pretty near hit Texas with a stone. Since it is just over the next hill, let's stop at the home of David B. Cundiff, and check out his frequency list for Lubbock, Texas.

39.58	Texas Fire Marshal
131.50	Carelink Helicopter
151.355	Texas State Parks
151.415	Texas Parks & Wildlife
159.2700	Texas Parks & Wildlife
452.975	Avalanche Journal
457.975	Avalanche Journal
463.125	AeroCare Helicopter
463.725	AeroCare Helicopter

No doubt you've heard Australia referred to as the "land down under." Actually, Australia isn't that far from Texas. I don't know the exact mileage but how far "under" Texas could it be? Bob Bell lives in Australia, and he has extended an invitation for everyone to pay him a visit. If your passport is handy, jump aboard. Our next stop is Sydney, Australia.

72.380	Sidney Morning Herald
72.98	National Parks and Wildlife
159.430	National Parks and Wildlife
163.30	Sidney Morning Herald
168.540	Train track Inspectors, statewide
462.925	Sidney University security
466.70	National Crime Auth.
467.275	Fisheries Inspectors
468.60	State Emergency

473.225	Immigration Dept.
485.250	Harbourlink Monorail
489.225	Sidney Surf Lifesaving
489.60	Customs Service, airport
489.625	:
489.725	:

I hope that you enjoyed this month's Frequency Exchange. And don't worry about the gas bill. I'll tell Larry Miller that we were in Sidney, New York.

The Scanning Test

Are you ready to put your scanning ability to the test? In January's column, I introduced our Scanning Certificate Program. If you missed that issue, don't panic. Here's what you need to know.

There are three levels of expertise. Scanning Novice, Scanning Specialist and Scanning Communications Expert (SCE). To become a certified SCE, you must have successfully passed all three exams.

At this time, I'm offering the Novice test. It consists of 30 multiple choice questions. You simply darken the correct answer and return the answer sheet. If you pass the exam, you'll receive a scanning certificate that can be framed for display.

To take the test, send \$10.00 dollars to: Scanning Test, P.O. Box 695, Honey Brook, PA 19344. The ten dollar fee includes the price of your Novice test, and the mailing of your certificate. There are no hidden costs, and this isn't a gimmick.

I designed all three exams, and I'm personally grading each test. This isn't a program that simply takes your money and then sends you a worthless certificate. You'll earn each award by passing a test.

If you don't pass, you don't advance. If you think that you have the "right stuff," prove it -- take the Novice test.

Scanning the Big Mac

Personally, I can't get excited over monitoring MacDonald's, but there are dedicated listeners out there. Here's the latest frequency pair that was sent in from an anonymous reader: 33.15/151.895.

AM or FM

My mail bag indicates that many of you cannot decide if a particular frequency should be programmed in the AM or FM mode. Here's a brief explanation that should help.

Military radio communications between 30-80 megahertz are wideband FM. Between 108-144 megahertz, the mode is AM, but there is an exception. Military bases operate narrowband FM between 138-144 megahertz. Narrowband FM is also used between 144-150.8, 162-174 and 406-420 MHz. The AM mode is used between 225-400 MHz. However, there is another exception. Satellite communications between 240-270 MHz may be FM or SSB.

Thank You

A "tip o' the typewriter" to the New York Police Officers who supplied information for "Scanning in the Hole." Your help was greatly appreciated.

Next Month

Has the news media slandered the hobby of scanning? Next month I'll tell you about my television interview and the reason for its cancellation.



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Take the next big step in communications excitement—check out the Realistic PRO-2006, available at Radio Shack.

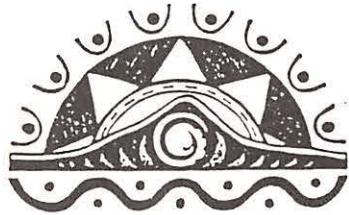
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what's new?



Radio New Zealand Int'l T-shirt

Radio New Zealand International is marking their first anniversary by offering a "limited edition" t-shirt for sale. The shirt features the station's name in English and Maori ("Te Reo Iriangi O Aotearoa O te Moana-Nui-A-Kiwa"), its distinctive Pacific logo (which looks like a bad dream -- it's quite exotic), as well as the frequencies.

We haven't seen the shirt but we are told that it is printed front and back in black and yellow on white. They come in sizes small through XXOS and are priced at US\$20.00. Checks or cash are accepted and orders to the U.S. are dispatched airmail.

The address for the RNZI t-shirt is RNZI Enterprises, P.O. Box 2092, Wellington, New Zealand. Tell them that you read about it in *Monitoring Times*.

Free Ham Video from ICOM

ICOM America, Inc., says that it has completed production of a special 28 minute video about ham radio. According to ICOM officials, Zman Productions, together with local hams, explored "an innovative concept for the video."

Neither ICOM nor Zman will reveal the content of the video other than to say that "More Than Radios" is a story about real people with a simple statement about amateur radio woven into the plot. The story took six months to film.

Copies of the video tape are free of charge. All you have to do is send a letter of request on your club's stationary. The address is: Zman Productions, 8051 N.E. 143rd St., Bothell, Washington 98011. A limited number of tapes are available.

MagicNotch

The MagicNotch audio filter is an automatic notch filter designed to instantly remove heterodyne interference from SSB (Single Side Band) reception. According to the manufacturer, it effectively reduces interference created by negligent ham operators tuning on or near the frequency you want to hear, Morse code signals, and other carriers. The MagicNotch filter also claims to be effective in reducing computer-generated interference.

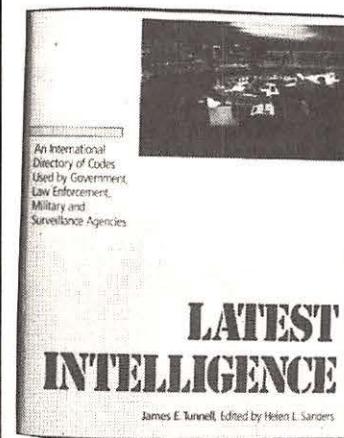
When interference is detected by the control circuitry, the internal switched capacitor active filter is automatically tuned to that frequency, reducing interference by up to 40 dB. In many instances, the operator may not even know that interference has occurred!

The filter is powered by 10-



14 volts DC, which is usually obtained from the accessory connector found on some radios.

Interested in hearing how it works? J-Com has a recording you can listen to. Dial 408-336-3503. For more information, contact J-Com at 408-336-3503 or write P.O. Box 194, Ben Lomond, CA 95005-0194.



Latest Intelligence

To quote the publisher's own description, "An international directory of codes used by government, law enforcement, military and surveillance agencies." For those seriously interested in radio communications, James Tunnell's encyclopedic reference is indispensable.

Topically alphabetized, thousands of terms, abbreviations, street-slang references, and surveillance buzz words are explained for the first time in a definitive volume.

Radio monitors will immediately recognize--and appreciate--tables of frequencies used by DEA, ATF, FBI, cellular telephones, FAA, aircraft flight tests, U.S. Marshals, Border Patrol, medical networks, U.S. Air Force Mystic Star, military air refueling, aerobatic teams, Secret Service and others.

Lists of resources and addresses are provided, as are public safety ten codes and response codes. Quite an eye opener for the dedicated monitoring enthusiast.

Latest Intelligence by James E. Tunnell is selling for \$16.95 plus shipping from several *MT* advertisers.



Wireless Burglar Alarm

Midland was at one time the leading supplier of CB radios. It now bills itself as offering "a very broad range of specialty products" -- specifically things like the Midland State-Of-The-Art Wireless Car Burglar Alarm.

This portable unit, called the 72-375, is powered via the vehicle's cigarette lighter or by direct hook up to the battery.

The 72-375 detects intrusion by monitoring both motion and vibration -- motion being attempts to tow or push the vehicle and vibration being any type of shock such as an attempt to break a window.

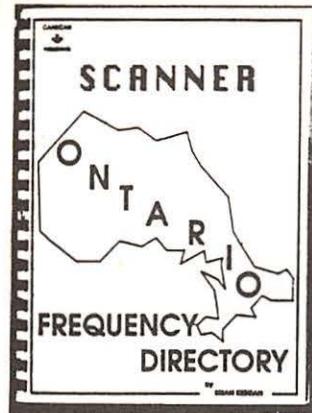
The unit can be turned on and off with a small remote control device that operates from up to 30 feet away.

For more information on the 72-375 wireless car burglar alarm, contact Midland at 1690 North Topping, Kansas City, Missouri 641-241-8500.

Scanning Ontario

For Ontario scanning enthusiasts, the *Ontario Frequency Directory* is one incredible directory! Featuring public safety, aircraft and marine, utilities, paging and trunked communications systems, racing and railroads, ham radio and government, Brian Keegan has detailed over 11,000 separate entries.

Sorted first by frequency (27-956 MHz), a cross-reference by city makes this volume particularly suited for scanner monitoring. Data fields include frequency, location,



type of assignment and name of licensee.

To order the *Ontario Frequency Directory*, send \$21 plus \$3 shipping (Ontario residents add \$1.95 sales tax) to Canscan Publishing, Box 3009, Tecumseh Postal Station, Windsor, Ont. Canada N8N 2M3)

New Editions in Print:



1991 Pirate Radio Directory

Noted pirate chaser George Zeller has put together another edition of his excellent pirate radio directory. This year, Zeller features profiles of some 150 stations that have been active during the past twelve months. Each profile contains addresses, frequencies, formats and more.

In addition to the profiles, Zeller presents an overview of this constantly shifting cast of characters and offers tips on how to tune in these elusive phantoms of the airwaves.

Catching pirates on the shortwave bands is never easy, but tuning them in is certainly easier with the

help of *Pirate Radio Directory*.

The new 1991 *Pirate Radio Directory* ships later this month and is \$8.95 plus 1.20 book rate shipping or 2.80 UPS from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

Guide to Utility Stations

Joerg Klingensfuss's annual utility guide is an excellent companion to the Grove *Shortwave Directory* and the Gilfer *Confidential Frequency List* because of the guide's European emphasis and the fact that inactive frequencies are purged every 15 months.

The *Guide* is arranged by frequency and includes call signs, modes and locations of stations. Additional chapters include alphabetized call sign lists, ITU location symbols, NATO routing system, extensive RTTY information with associated Q and Z codes, addresses of some 1000 utilities stations around the globe, and even fold-out aeronautical charts.

Unlike the inconsistent quality of previous editions, this ninth edition has excellent printing and includes extensive RTTY and FAX entries as well as the more common SSB and CW material. *Guide to Utility Stations*, Ninth Edition is approximately \$31 plus shipping from DX Radio Supply and other *MT* advertisers.

Police Call

For nearly three decades *Police Call Radio Guide* has remained the widest selling scanner frequency directory in the country. Its concise listings of public safety, railroad, aircraft and government monitoring data

are extracted directly from FCC records, showing frequency, call sign, service, whether base or mobile and the number of radios authorized per channel.

An excellent introduction sheds light on many of the hobby's mysteries, even providing a directory of monitoring clubs, plus an extensive table of VHF/UHF frequency allocations in the back.

Unfortunately, Hughes perpetuates a common myth by warning against using 75 ohm TV coax. In actual fact, 75 ohm RG-6/U offers less signal loss than any 50 ohm cable except the most expensive (to which it is nearly equal).

With that misconception corrected, *Police Call* represents a considerable value for such low cost and its new computer-driven listings represent an important step in improved accuracy. *Police Call Radio Guide* may be ordered for \$7.95 per volume plus \$3 UPS from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

National Highway Patrol

While not intended to be the consummate guide to monitoring, this new handbook fits easily in the glove compartment and provides information for mighty good listening across the U.S.

An introductory section explains some monitoring law basics from state to state along with a glossary of frequently-encountered radio terms. Alphabetized by state, the handbook lists the best frequency "hits" for various locations nationwide, including uses for the channels. Handy for the interstate traveler.

The second edition of *National Highway Patrol Frequency Handbook* is available for \$9.95 from Scanner Master, PO Box 428, Newton Highlands, MA 02161.

Books for Every Radio Interest



MONITORING THE MILITARY

Over 10,000 verified and several thousand unverified scanning frequencies for hundreds of U.S. military installations. Security, fire/crash, trucks, aircraft maintenance, air traffic control, POL trucks, medical disaster nets covered and more. \$16.95 +\$1.55 ship.

SHORTWAVE DIRECTORY, 7th ed. By Bob Grove. Utility monitoring's best friend. Covers every bit of the 10 kHz to 30 MHz radio dial. Accurate and easy to use. \$19.95 +\$1.90 ship.

NAT'L RADIO CLUB AM LOG 1991 Edition contains 6000+ AM listings. Info like: location, frequency, transmitter power, format, news network, address, etc. 3-hole punched. \$19.95 +\$1.90 ship.

TRAVELER'S GUIDE to WORLD BAND RADIO New book from WRTH folks. Details of English broadcasts on AM, FM and SW in major travel destinations in a graphic format. Handy size, cheap. \$9.95 +\$1.20



1991 World Radio TV Handbook is just \$17.95 POST-PAID. Covers SW, longwave, AM, FM & TV worldwide. Station profiles include address, phone, skeds, personnel, languages, maps & more. 45th edition.

1991 Passport to World Band Radio A huge compilation of who's broadcasting what, when, where in a graphic format. Plus interesting features and Larry Magne's receiver reviews. \$14.95 +\$1.55 ship. An annual treat!

CITIZEN'S GUIDE TO SCANNING Bob Kay shares his extensive experience with scanning. You CAN hear more than fire and police. \$12.95 +\$1.20 ship.

BOB KAY'S SCANNER ANTENNA PLANS Non-technical scanner antenna plans to build, each for under 10.00. Five designs: beam, bow-tie, ground plane, cordless phone and longwire. \$12.95 +\$1.20 ship. 3-hole punched. Bob built them on his kitchen table.

DX Radio Supply

Box 360, Wagontown, PA 19376

To have your new product or book considered for review in *Monitoring Times*, send it to Editor, 140 Dog Branch Road, Brasstown, NC 28902.

Not So Heavy Metal - A Guide to Soldering

As I look back over February columns gone by, I find that I do tend to "wool gather" a bit in preparation for my work on such a cold winter month. This month I spent some time in consideration of the teaching role "The Beginner's Corner" performs. This led me to remember my first electronics teacher back in my freshman year at John F. Kennedy High School, Colonel Blinky Austell. (No, spark gaps were NOT still in use.)

Blinky was fresh out of the Air Force and he thought teaching kids would be a neat way to make a post-retirement living. We were somewhat less disciplined than the airmen he was used to leading. Still in all, he did his best.

Is this linear thinking exercise going someplace, Uncle Skip?

Hey, have I ever let you down?

Somewhere in the midst of frying the odd resistor, Blinky Austell was the first guy to show me the correct way to make a "Western Union" splice. Colonel Austell also taught me how to handle a soldering iron and, if I may say so myself, I have been a better person for it. Some people chase themselves to mountain tops to learn various skills from ancient masters. Old Blinky taught me the "Zen" of the perfect solder joint. Does that make me a Soldering Samurai? What more could a person ask for?

Every good student must become a teacher. So I pass on Colonel Austell's wisdom in a little ditty I like to call:

UNCLE SKIP'S GUIDE TO SOLDERING

Okay, I can anticipate the first question. Why should I learn to solder? Easy, Bunkey. It's one of those skills that you will always find a use for. Even if you never have any desire to build or repair your own equipment, soldering is almost a necessity when it comes to putting up a good antenna. What if your car stereo speaker connection broke loose? A little dab of solder can usually put things right.

Soldering Irons

Sometimes I wish things were as simple as they were back when Blinky was teaching me soldering. In the good old days, you could handle just about every kind of need with one standard garden-variety 25-watt soldering pencil. In general, and especially for the beginner, this type of soldering iron will still

be the way to go for most soldering projects. You will want to get an iron that has replaceable tips as these give way periodically under normal use.

However, if you find yourself graduating to projects that involve hooking up integrated circuits, your second investment will be in a 15-watt iron that has a "grounded tip." These type of irons can be easily spotted by checking out the power cord to see if it has a third prong on the plug just like most major appliances.

Also, if your soldering tastes tend to get heavy, such as bringing together two large antenna wires, you will need to look into 100 or 200 watt soldering guns.

The last time I dug to the bottom of my tool box I discovered that I have acquired five different types of soldering irons over the years to meet various needs. Over time, it is



One cold solder joint in a transceiver like this ICOM IC-765 could render it useless.

likely you will graduate from your 25 watt iron. You will find that most electronics parts outlets and better hardware stores will be able to equip you with your every soldering need.

Caring for your Iron

As you make use of your soldering iron, you will want to keep the tip cleaned and "tinned." Cleaning simply involves wiping excess solder and waste flux off on a damp sponge. Tinning is simply the process of touching the solder to the iron's tip and applying a light coat of fresh solder immediately prior to making a connection. Both of these steps allow your iron to work efficiently and they prolong tip life.

Also, keep in mind that the tip of your soldering iron will run well in excess of the temperature that will set paper, wood and human flesh on fire. Therefore, you will want to keep your heated soldering iron in a safe stand or holder whenever you are not using it.

You will only pick up a soldering iron by the wrong end once, the learning experience and the scars will last a lifetime.

Solder

Back when Blinky was teaching, all you had to do was pop down to the nearby Allied Electronics Store (that was what we had before Radio Shack) and pick up a roll of 60/40 rosin core solder. Things have changed a bit.

Good old 60/40 solder was an alloy made of 63 percent tin and 37 percent lead. This particular mixture of metals would melt just under 400 degrees F and it would melt and spread uniformly and rapidly.

But we now live in a world that has become increasingly concerned about our day to day exposure to lead in our environment. So now we make use of solder that is made up of 96 percent tin and 4 percent silver. You have to use more heat, 430 degrees F, and it is a tad more expensive, but it seems to get the job done just as well as its ancestor. I guess I just don't think calling it 96/4 will ever catch on.

All solder used for electronics must utilize a rosin-based flux as opposed to the acid-based flux commonly used by plumbers. Acid-based flux would corrode electronic components. Fortunately, we do not need to give this a great deal of thought because the rolls of solder you will pick up at your local electronics outlet will have the rosin flux right inside of it, hence the name Rosin Core Solder.

Flux removes the oxides that are present in your connection that cannot be removed by cleaning and floats them away from the joint. This will appear as a yellowish-brownish ooze on the surface of your soldered connection. This yuk is easily wiped away with a little alcohol.

Okay, we have the soldering iron, we have the solder. Let's get started.

A Very Simple Soldering Connection -- Two Wires

Heat up your soldering iron. Make sure that the tip is clean and properly tinned.

Take two pieces of plain old wire. The kind you might use to hook up stereo speakers. Strip the insulation off of one end of each wire back about an inch. Prepare the two ends by making sure they are as clean as you can possibly get them. If the portions of the wires you are connecting are contaminated by

SCORPIO

just about any substance, the joint will be subject to corrosion and failure. The solder's flux will remove the oxides that form during the heating but it cannot perform miracles.

Next take the two stripped ends and twist them together tightly. Make sure they are twisting together and that it is not simply one wire traveling around the surface of the other. This takes some care but it will provide you with one of the essentials of successful soldering. You always want to create the most sound and stable mechanical connection between the two parts that you want to join. Solder is not really a glue, rather it creates an alloy between the two pieces you are joining and itself. An unstable joint will often be a source of failure as the joint weakens over time. So in the case of our two wires, after you have twisted them together by hand, you will want to give them a bit of a twist and maybe even a squeeze with a pair of pliers.

Now that we have our mechanical connection, take up your soldering iron in one hand and your solder in the other.

Aha. How do you hold the items being soldered? Easy, Compadre. Stabilize the wires on a table top, perhaps resting them under a few tools or books. Or clamp the wires in a small vise. The idea is to get the soon-to-be-soldered connection free from movement and reasonably far away from anything that might be damaged by the heating process. Since every connection you will ever make will be unique, you will have to get creative in your methods. But this is half of the fun.

Now where were we? Oh yes. With solder and iron in hands, first test the iron to see if the tip is hot enough to get the job done. This is checked by touching the solder to the tip and watching it melt. Just a touch, more than this will make for messy work.

Next touch the hot iron to the wires and hold it there. Make sure that the iron is heating both wires. This should be fairly easy if you have made a sound mechanical foundation.

After a moment (you will get a feel for how long with practice), while the iron is still heating the connection, touch the solder to the connection's surface. Do not touch the solder to the iron. If the joint is heated sufficiently, the solder will flow over the two wires evenly. When the surface of the joint is covered fully, remove the solder you are holding in your hand and then remove the soldering iron. If you do it the other way around, you may find the roll of solder stuck to your connection.

Place your soldering iron in its safety stand. Be sure you allow the soldered connection to cool without moving it.

Now take a moment to inspect your work. If all went well, the surface of the connection should appear shiny with perhaps a touch of that yellow-brown gook on its surface.

If the joint appears dull, this is usually an indication of what is known as a cold solder joint. This will occur if the parts being connected were not heated evenly or if the mechanical connection moved even slightly during soldering. Cold solder joints may work initially but will result in circuit failure in the not too distant future because the proper alloying process did not occur and the joint becomes subject to corrosion.

If the connection has a crusty or rough appearance, this usually indicates that you tried to flow the solder before the joint was sufficiently heated and/or removed the heat too early.

There you have it; you have just mastered the same basic skills that Blinky Austell taught me so many years ago. Cut back the excess wire, wrap that puppy with electrical tape and you are in business. To the little electrons flowing along the wire, everything is copasetic.

Onward and Upward -- Mounting a Component on a Circuit Board

Once you have mastered the skills required to join two wires, you can apply them to any situation. Let's say you want to put a resistor on

ID[Sta]: Radio Moscow
Date: 10-23-90 Begin Prgr: 01:30:17
Mode: AM End Prgr:
Signal: Agt/Svc: Broadcast
Remarks: Contemporary Russian Music and News
Data: 2300 07/28/89 / 01:00 > 02:15 / 7.305.00 AM / Signal(59+30)
[Radio] [↔] [CLS] Manual Mode [CLD] [Sr/F] [Qu/Ex] [T-U]
LogScan Log of John Doe [T-U]

Terminal Unit Display Window

Terminal Unit Command Window

1 ID[Sta] 2 Locat 3 Signal 4 Agency 5 Remark 6 TimeON 7 TimeOFF 8 Clear 9 Log 10 Optin

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a circuit board. The only real change in the program is that you will want to tin the leads of the resistor prior to mounting. This is simply done by heating each lead and applying a thin layer of solder just as you do when you tin the leads of the resistor prior to mounting.

If the circuit board's metal surfaces have not been pre-tinned, you will also want to tin the pads that the component will be mounted through. Be careful that you do not close the mounting holes in the process of tinning the pads. This tinning process improves heat transfer. Then all the old rules apply. Sound mechanical connection (usually done by spreading the leads after mounting), heat both component and board foil evenly, flow solder, remove heat and allow to cool.

When soldering on circuit boards you will want to generate enough heat to solder effectively but not so much as to cause damage to the board or surrounding components.

If you are soldering a component such as a transistor, diode or integrated circuit, you will need to draw heat away from the component to prevent damage to its innards. This is accomplished with a "heat sink." You can use pliers, tweezers, paper clips or commercially produced heat sink tools. The object remains the same. The heat sink allows the heat to go somewhere other than to the inside of the component, saving the day.

Zen Soldering

Seeking perfection in your soldering process will stand you in good stead wherever the radio monitoring hobby may lead you. Practice, practice, practice. That is all Blinky ever asked of us.

A Fed Head in the Clouds

If you have a good map, you'll find the town of Cloudcroft in the west central part of New Mexico. The scenery here is breathtaking, the air is clean and the people are friendly -- most of them, anyhow. Some of the people you'll find around town aren't locals and some of them aren't tourists. Instead of loud Hawaiian shirts and bermuda short, they were the khaki's of military service or the ominous dark suits of certain government employees.

The reason for their presence in this tranquil little village is strictly top secret. Huddled amidst the tall pines and glistening in the bright mountain sunshine is a white geodesic dome. The narrow dirt road leading to the facility is easy to miss, the small sign understated: "USAF CLOUDCROFT OBSERVATORY -- STELLAR CALIBRATION SITE."

Go beyond that little sign and you will soon be confronted with others, larger and more threatening. The next one is attached to a heavy fence festooned with razor wire. "WARNING: NO TRESPASSING. ANY UNAUTHORIZED PHOTOGRAPHY IS NOT ALLOWED."

If you have a feeling that you're being watched, look around. You probably are. There are TV cameras, motion sensors, and a call box with a keyboard, all attached to the fence. For an observatory, the security here is rather intense.

What the huge white dome contains is actually a super-secret piece of high tech hardware managed by the Air Force for the CIA and NSA (National Security Agency). Officially known as the "Electro Optical Observation Site" on government budget records, the job of the USAF Cloudcroft Observatory is to take highly detailed photographs of anything in orbit that the Air Force, CIA or NSA wants to see close up.

Originally commissioned in 1962 as a way to keep an eye on Soviet spy satellites, the equipment consisted of two five inch spotting scopes. These low powered "eyes" scan the sky, looking for potential targets. The scanning scopes were slaved to a larger forty eight inch telescope used for tracking and taking detailed photos of orbiting debris, satellites or spacecraft.

Even thirty years ago, the detail was said to be extraordinary. Cloudcroft can photograph an object the size of a basketball 22,000 miles out in space. Resolution is thought to be about one inch, so not only can they see the basketball in space, but they can also tell you who manufactured it.

Former staff say that USAF Cloudcroft maintains a sort of top-secret photo gallery for the amusement of its employees. There

among other shots taken by the staff, are pictures of space walking Soviet cosmonauts that display such clarity that the insignias on their suits are clearly readable.

Today, the site is said to be even more impressive, updated with the latest optical and radio technology for photographing, tracking, and measuring the mass of any object in orbit. Sensitive ELINT (electrical intelligence) receivers record the telemetry data coming from spacecraft, pattern, store and break down any encrypted data, and pass it on for analysis to Air Force, NSA and CIA technicians. The telescope is so powerful that it has been used to count the broken tiles on the Space Shuttle while still in orbit.

Built by TRW and maintained as part of the Ground-Based Electro Optical Deep Space Surveillance System, or GEODSS, the operations headquarters are located at nearby Holloman Air Force Base in Alamogordo. It is connected to other sites at Taegu, South Korea, and Maui, Hawaii. The Air Force maintains GEODSS' function to spot new objects in space and relay their position to Space Surveillance Center at NORAD headquarters.

This is where the monitoring fun comes in. Communications to and from GEODSS facilities, NORAD aircraft and NORAD HQ can be easily monitored by anyone living near or visiting one of the sites.

If you are ever in the area and have a scanner capable of monitoring the UHF military bands, pull into the small camping area just a quarter of a mile from the site and listen in. Be careful not to make your presence known, for there are frequent security patrols who would take great delight in confiscating your gear. I saw an innocent looking 4x4 filled with tough-looking USAF security personnel that screeched to a stop when they saw me by the side of the road, looking at the site with binoculars and holding a scanner. I beat it out of there fast and lost them in the tourist traffic heading to a country craft bazaar in Cloudcroft.

Even with the risks, the monitoring is first-class. On any given day you can hear coordinating between NORAD aircraft on alert, the GEODSS sites photographing and tracking the space objects, and F-15s running anti-sat (A-SAT) exercises on the passing birds. Holloman AFB is the base for the United States Air Force's A-SAT operations and has specially equipped F-15 Eagles that can destroy low-orbiting targets with two-stage missiles.

Some of the communications is encrypted but most are made in the clear. Data links from flying laser platforms, F-15s and AWACS aircraft, can be heard engaged in



very realistic exercises, sometimes lasting for hours on end.

These are the frequencies in use near the site.

165.475	Cloudcroft site security (USAF)
165.110	Cloudcroft site security (USAF)
260.8 (AM)	NORAD Primary* AICC (air coordination)
364.2 (AM)	NORAD operations (links to ground sites and Holloman AFB)
288.0(NBFM)	AFSATCOM link to ringmaster (NORAD Headquarters)
264.9 AM	Computer Data Link (AWACS/F-15 A-SAT Aircraft)
397.9 FM	Alamogordo ATC (High Altitude)
324.3 AM	Holloman AFB approach (F-15 base)
255.9 AM	Holloman AFB Departures

* Airborne Intercept Command Communications

Other active NORAD frequencies in use in the Cloudcroft area are 228.800 MHz, 234.7, 238.5, 251.0, 251.1 (AWACS link to Tinker Air Force Base, Oklahoma), 256.6, 263.2, 270.4, 275.00, 278.600, 287.800, 292.700, 298.500, 302.400, 306.400, 325.500, 338.400, 344.000, 356.000, 364.200, 375.100, 386.200 and 392.800 MHz.

The amount of activity on these channels varies as does the communications mode. Sometimes the transmissions are AM, NBFM, WFM, data transmissions or encrypted. HF (shortwave) transmissions with other sites can be heard on 9.023 kHz.

Some housekeeping traffic can also be heard on the SAC frequencies of 311.00 MHz (SAC primary) and 322.00 MHz (SAC secondary).

Month of the Anonymous

A new reader up Missouri way just sent in a very nice list he accumulated at a recent airshow. The airshow was at Richards-Gebaur AFB, Missouri; the contributor wishes to remain anonymous.

36.80	A-10 aircraft/air to air
38.65	In army "Jeeps"
42.15	In army "Jeeps"
46.90	Army reserve operations
118.90	K.C. app/dep control
119.2	R-G AFB ground/clinc delivery
123.3	R-G AFB ground
123.475	Army Golden Knights
124.2	R-G AFB tower
127.2	R-G AFB ATIS
141.0	A-10/air to air
141.85	USAF Thunderbirds
143.60	Navy Blue Angels
148.125	???
148.15	Civil air patrol
148.175	"Yellow 3, Yellow 1"
148.45	R-G AFB ground
148.50	Air show command post/narrator
148.55	"Yellow 3, Red"
149.30	Air show command post
149.975	DES/DVP
150.195	Police, some DES/DVP
150.225	"Golfer 1, Golfer"
150.445	???
163.4375	Army Corp of Engineers ?? (probably-Rod)
163.5625	???
164.175	???

165.0875 ???
 165.1125 Commander's net ?? (probably-Rod)
 166.225 ???
 172.300 Input to 165.1125
 173.025 DES/DVP
 173.175 ???
 173.4375 Hospital (probably-Rod)
 173.4875 ???
 227.80 303 TFS SOF (Ground Hog)
 235.25 USAF Thunderbird runway check
 236.60 R-G AFB Tower
 243.00 Guard check
 251.60 Navy Blue Angels
 252.10 442 AFR command post/frontline
 275.35 Navy Blue Angels
 285.60 K.C. ARTCC (center frequency)
 289.40 R-G AFB ground/Cinc delivery
 294.70 K.C. app/dep control
 305.10 Truman MOA
 318.10 K.C. app/dep control
 321.40 "Snooper 3, Ground Hog" 303 TFS
 322.95 USAF Thunderbirds
 413.10 USAF Thunderbird aircraft maintenance
 413.20 "Medic 1"
 413.30 ??? (AFR frequency)
 413.50 "Medic 2, Medic 1, command post"
 462.975 "LifeFlight"
 467.975 Input to 462.975

Mil Sat Intercept Report

Mike Ross up Columbia, Tennessee, way has been monitoring some military satellite activity and a few other military frequencies. His list of intercepts was recently forwarded to me, so for those of you who are capable of hearing the milsats in the 240-270 MHz range, these logs are for you.

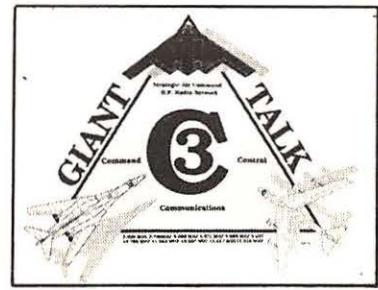
Freq	Mode	Time	Intercepts
30.350	NBFM	0654	Echo 3 Sierra with SAC type broadcast
261.475	NBFM	0204	2 stations discussing problem with aircraft (SAT)
261.475	NBFM	0228	Furious/Z-man with message for relay to army dispatch and skywatch coordinator for search. Gave freq as 390.2 129.25 51.60
261.475	NBFM	0412	Furious/Tallpipe Kilo 1 crash site found-cannot confirm survivors
261.675	NBFM	1445	Dragon and ELC-Military personnel in Egypt with phone patches. (SAT)
261.675	NBFM	0827	Dragon/ELC/KZZA-Military personnel in Egypt with phone patches. (SAT) (I think, Mike, this is the 101st Airborne in the Sinal-Rod)
261.900	NBFM	1013	2 stations setting up phone patches via ACR 35 similar to ham patches but military. (SAT)
261.900	NBFM	1316	Barto/Sanford/Avon Park-Various operational subjects, locations of stations. (SAT)
135.575	NBFM	0410	Operational chit-chat, mentioned Alaska twice. (ATS satellite frequency-Rod)
261.600	NBFM	1608	Unknown/L7H calling with no-joy (SAT)
261.600	NBFM	1615	NCX/L7H "In the plane" one way traffic no response (SAT)
261.450	NBFM	0157	Accuse/Linch-Barely readable (SAT)
261.600	NBFM	0248	Unknown station female voice/Spanish (SAT) Very interesting.

While we will continue to welcome government/military satellite intercepts, be sure to check out next month's *Monitoring*

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Times as *MT* leads the way into the 90's with the industry's first satellite DX column.

Mailbag

"What is a preset frequency?" That question comes from reader Terrance Boot.

Terrance, here's your answer. Most military aircraft radios have a total channel storage capacity of around 20 frequencies. That means that the pilot or ground maintenance personnel can program these into the radio's memory, much as you store the frequencies of your favorite FM radio station on the car radio's buttons. In the case of the military, each frequency is assigned a number called a "preset" or "channel." These are not scanned by the pilot but are instead dialed up by manually turning a selector knob on the radio.

Instructions are simpler -- "Go to button 15." Instead of trying to dial in 325.150 and having to watch the radio to make sure that frequency gets dialed up correctly, the pilot only has to worry about getting to the correct preset or "button" number.

One of the best ways to get preset information is to go to the local air show and, if tours are being conducted, jump into the cockpit and check out the frequency card usually next to the radio. At this point it might be wise to check with the tour guide to make sure it is okay to copy down the frequency information. From my many air show experiences, if the cards are sensitive, you will not see them displayed. When you finish copying the list you have a complete set of presets for that squadron and probably 90 percent of the presets for that base.

Once you have a preset list for your area it probably will not change very often. The frequency cards only change when a frequency changes, a special mission is being conducted,

or the aircraft is operating outside its normal operating local area.

This list of presets comes from a fellow out in California who also wishes to remain anonymous. It's for McClellan Air Force Base.

Preset	Frequency	Location
1	225.4	McClellan ground
2	369.2	McClellan tower
3	269.9	McClellan ATIS
4	256.7	Sacramento Metro
5	255.9	Travis tower
6	384.9	Travis ATIS
7	348.4	Mather tower
8	270.1	Mather ATIS
9	275.8	Eielson ground
10	255.6	Eielson tower
11	289.6	Castle tower
12	372.2	Pilot to dispatcher
13	344.6	PMSV: Metro
14	308.6	Yokota ground
15	315.8	Yokota tower
16	281.0	Yokota ATIS
17	349.4	MAC command post
18	377.8	McClellan consolidated command post (FOSDICK)
19	276.0	41RWRW command post (Lark control)
20	255.4	Flight service station
Extras		
9	351.2	Mather AFRES (Baker control)
10	311.0	Mather command post (also SAC primary)
11	321.0	Mather command post (also SAC secondary)
12	296.0	Mather pilot to dispatcher

If you've got a copy of the May 1990 *MT* handy, you may want to look up this column and check out table 1. Randy Rodgers of Austin, Texas, sent us a listing of presets he personally saw in an RF-4 aircraft at Bergstrom Air Force Base.

Well, that does it for this month. Many thanks to all for the input and now it's time for some output; it's Cubo time.

Say Again?

Listening to aero communications can be an exciting experience -- provided that you have at least a fundamental grasp of what the controllers and pilots are saying. Yes, there is a good deal of jargon in aero monitoring and we want to help you get the most out of your radio.

We'll examine some of the most commonly used aviation communications expressions and phraseology on the VHF bands in alphabetical order and continue it in the next issue. Then, we'll tackle the HF (shortwave frequencies) counterparts in subsequent issues.

Remember, no matter how much experience you have in regard to monitoring, there's always new words or phrases coming up which can do with some translation. In the following list, we'll give some examples as space permits.

ABEAM: You may hear a pilot tell a controller, "We're abeam Chicago" or some other city. An aircraft is "abean" a fix, point, or object when that fix, point, or object is approximately 90 degrees to the right or left of the aircraft track. Abeam indicates a general position rather than a precise point.

ACKNOWLEDGE: "Please acknowledge my last transmission." In this instance the controller is asking a pilot to say that he's received the controller's message.

AFFIRMATIVE: Meaning yes as in "That's affirmative."



Laura Quarantiello, MT
subscriber and pilot

ALTIMETER SETTING: "What's the altimeter setting for Indianapolis International Airport?" The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting -- 29.92 (mlb setting).

ARC: The track over the ground of an aircraft flying at a constant distance from a navigational aid by reference to distance measuring equipment or DME.

ARINC: (Aeronautical Radio, Inc.) A company owned by the airlines for which it provides air/ground communications as well as other services. You can hear ARINC's radio operators setting up phone patches between pilots and their company stations, and handling other requests on frequencies between 128.825 and 132.000. They can also be heard on the HF (shortwave frequencies) aero bands.

AUTOMATIC DIRECTION FINDER/ADF: An aircraft radio navigation system which senses and indicates the direction to a low/medium frequency nondirectional radio beacon ground transmitter. This instrument can be used to help orient lost and/or confused pilots by Flight Service Station Specialists giving what's called a "DF Steer."

BEARING: "What's our bearing for Philadelphia?" The horizontal direction to or from any point, usually measured clockwise from true north, magnetic north, or some other reference point through 360 degrees.

CHOP: Ranging from "none" to "light ripples occasionally" to "continuous heavy chop," this expression indicates the bumpiness of the ride.

CLEAR-AIR TURBULENCE: Turbulence encountered in air where no clouds are present. This term is commonly applied to high-level turbulence associated with wind shear. CAT is often encountered in the vicinity of the jet stream.

CLEARED AS FILED: "Delta 45 is cleared as filed to Denver Stapleton Airport." Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include altitude, SID or SID Transition.

CLEARED FOR APPROACH/TAKE-OFF: Air Traffic Control (ATC) authorization for an aircraft to execute any standard or special instrument approach procedure for

that airport. Normally, an aircraft will be cleared for a specific instrument approach procedure.

CLEARED FOR TAKEOFF: ATC authorization for an aircraft to depart. It is predicated on known traffic and known physical airport conditions.

CLIMB-OUT: "We experienced some light chop on the climb-out." The climb-out is that portion of flight operation between takeoff and the initial cruising altitude.

CODES/TRANSPONDER CODES: The number assigned to a particular multiple pulse reply signal transmitted by a transponder.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF): A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an uncontrolled airport. The CTAF may be a UNICOM, Multicom, FSS, or tower frequency and is identified in appropriate aeronautical publications.

COMPANY TRAFFIC: If you hear a controller say "You have company traffic at your 12 o'clock position," it means that he's advising a pilot that he and another aircraft in the same vicinity also work for the same company. Also used in other situations -- i.e. "Your company reported chop at that altitude." When used by a controller, this means that someone from the same company as the pilot to whom the controller is speaking gave a ride report in which chop figured at a certain altitude.

COMPASS LOCATOR: A low power, low or medium frequency (L/MF) radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS). It can be used for navigation at distances of approximately 15 miles or as authorized in the approach procedure.

CONFLICT ALERT: A function of certain Air Traffic Control systems designed to alert radar controllers to existing or pending situations recognized by the program parameters that require his immediate attention/action. Controllers have given this function several nicknames. Some of the more printable of these include the "Squeal-a-deal," "Snitch Gear" and "Sally Snitch."

CONTROLLED AIRSPACE: Airspace designated as a control zone, airport radar service area, terminal control area, transition area, control area, continental control area, and positive control area within which some or all aircraft may be subject to air traffic control.

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CONTROL SECTOR: An airspace area of defined horizontal and vertical dimensions for which a controller or group of controllers has air traffic control responsibility, normally within an ARTCC or an approach control facility. Sectors are established based on predominant traffic flows, altitude strata, and controller work load.

COORDINATES: Many times you may hear a controller ask a pilot for the coordinates of his destination. This simply means the intersection of lines of reference usually expressed in degrees/minutes/seconds of latitude and longitude, used to determine position or location.

CRUISING ALTITUDE/LEVEL: "Our cruising altitude will be at flight level 31 thousand." This is an altitude or flight level maintained during route level flight.

DEAL: Controller's slang for an aero mishap either on the ground or airborne. Don't ever ask a controller if he watches "Let's Make a Deal."

DEPARTURE TIME: The time an aircraft becomes airborne.

DEPARTURE CONTROL: A function of an approach control facility providing air traffic control for departing IFR and, under certain conditions, VFR aircraft.

DEVIATIONS: A departure from a current clearance, such as an off course maneuver to avoid weather or turbulence.

We'll have more "plane talk" in the April issue. In the meantime, if you hear something that you'd like to have defined before then, just drop me a line at the Brasstown address.

More VOLMETs (Aviation weather on the HF bands)

As promised, here's more VOLMET frequencies. Do you mean to tell me you've logged all of those we ran in December's column?

Keep in mind that 95 percent of these stations use USB -- upper sideband -- so your HF receiver must have a BFO (beat frequency oscillator) in order to tune these in properly.

Remember, "H" stands for hour and + means how many minutes past the hour the weather forecast is broadcast.

SOUTH AMERICAN REGION: 2881, 5601, 10087, 13279

LIMA: H+10, H+40
BRASILIA: H+15, H+45
BUENOS AIRES: H+25, h+55

MIDDLE EAST REGION: 2956, 5589, 8945

BAGHDAD RADIO: H+00, H+30; Baghdad International, Basrah/Magal
TEHRAN RADIO: H+05, H+35; Tehran, Abadan
BERUIT RADIO: H+15, H+45; Beruit Int'l, Damascus Int'l, Larnaca, Cairo Int'l
CAIRO RADIO: H+20, H+50; Cairo, Damascus Int'l, Beruit, Luxor
BAHRAIN RADIO: H+10, H+40; Bahrain, Dhahran, Kuwait
BASRAH RADIO: H+30 (ONLY); Basrah/Magal, Baghdad Int'l
ISTANBUL RADIO: H+25, H+55; Istanbul, Yesilkoy

There is talk of a proposed Caribbean VOLMET net, which would be heard on 2950, 5580 and 11315. These would include Port of Spain, H+05, H+35; Merida, H+10, H+40; and Miami, H+25, H+55. However, as of this writing, they have not as yet gone on-line.

You Too Can be a Controller -- at least on your PC

I've found some aviation computer programs that you may be interested in. "Dulles Tower" is a very sophisticated Air Traffic Control simulation that involves controlling arriving and departing aircraft at Washington D.C.'s Dulles Airport. This program has five levels of interaction and rivals "Tracon" and "Rapcon" -- two very popular ATC simulations costing around \$50 each -- in its authenticity.

Then, there's "Jetset," which puts you in the captain's seat of a 747 and contains about 20 different subprograms for flights between various cities. This is a very close imitation of an airline's 747 flight simulator and *it ain't easy to fly those birds*, believe me, folks. I had sweat running down my back when I took out the runway lighting and ILS on the major runway in Philadelphia on my first try at the simulation. The program throws a new glitch at you each time you try it, too.

A third program, "Air Traffic," is a very simple ATC program. It can't really compare with "Dulles," but it's a fun way to learn elementary ATC procedures.

All three of these programs are available on shareware. What this means is that if you try them and like them, you send in some bucks (not to me but to the creator of the program). If you don't like them, you are free to go on your way, living life free, easy and without obligation.

Want a copy? You need a PC with at least one disk drive or a disk drive and a hard drive. Send me a blank 5-1/4 disk in care of the Brasstown address and I'll be happy to send you a free copy of "Dulles Tower," "Jetset," or "Air Traffic."

That's it for now. Next time we'll have more definitions, still more VOLMETS, a visit to American Trans Air (finally) and other goodies.

Until then, 73 and out.





Ham Handicapped Waivers

The FCC has now instructed volunteer examiners to expand the provisions granted to handicapped licensees attempting the entry level 5 WPM telegraphy examination. These accommodations included pausing the telegraphy test after sentences, phrases, words or even individual letters ... or requiring the applicant to demonstrate proficiency in sending text instead of transcribing.

Late last summer the FCC proposed regulations totally eliminating the 13 and 20 words per minute (WPM) telegraphy examination to amateur operator licensees who were incapable of passing those examinations due to severe handicaps. The proposal has now been unanimously approved into law.

While the initial waivers were based on a specified list of disabilities, the FCC declined to provide a list of handicaps to determine who would be exempt from the higher speed telegraphy requirements. Instead, the judgment of a physician will be relied on to establish that a person is so severely handicapped that he/she cannot pass a telegraphy examination.

The rules adopted require a physician's certification and a release permitting disclosure to the FCC of medical information pertaining to the handicap. The Commission said that the term "physician" would be limited to practitioners with full medical privileges, that is, doctors of osteopathy (D.O.) or doctors of medicine (M.D.)

Senior level licensees are eligible to be

accredited as volunteer examiners (VE's) in the Amateur Service. The question came up as to whether handicapped amateurs who had not passed the higher speed telegraphy examinations should be eligible to be VE's. The Commission said that any VE who is not competent to perform the VE functions should not administer examinations.

Ham Radio from Space!

Are you aware that the first satellite system authorized by the FCC was an amateur station? Since then, more than 30 unmanned amateur satellites have been launched. Amateur operators aboard the Space Shuttles and Space Stations routinely communicate with other amateurs around the world. The most recent ham astronaut was Ron Parise, WA4SIR, aboard the shuttle Columbia.

Parise carried a special robot packet repeater into space. Hundreds of amateur "packetteers" using personal computers and ham transceivers made the round trip! They will get a special QSL confirmation from NASA. The Shuttle Amateur Radio Experiment (SAREX) also included Parise making scheduled contacts from space with children in classrooms over amateur radio frequencies.

Incidentally, the Soviets have also put another amateur radio operator in space. Musa Manarov, U2MIR, headed for the space station Mir on the same day that Ron Parise headed for the stars in Columbia. Not one to

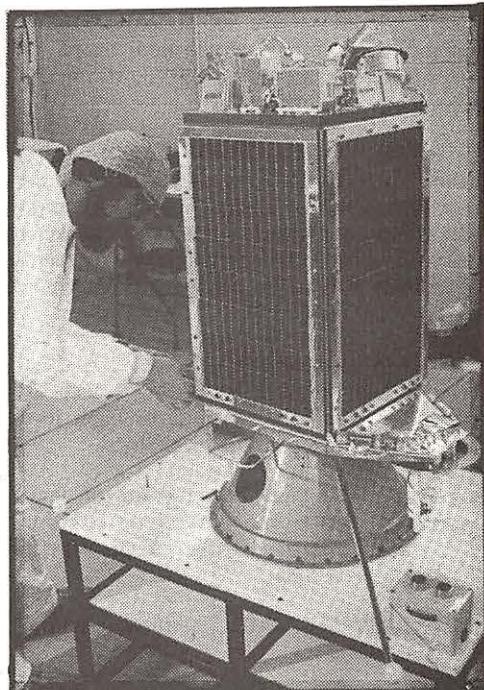


Photo: Dr. M.N.Sweeting, U.of Surrey

Ironically, hams stand to lose some spectrum to commercial satellites utilizing the very technology developed by amateurs. Pictured here is the Oscar 11.

be left behind for long, it is anticipated that the U.S. Space Station "Freedom" will house a permanent ham station when it is constructed during the coming decade!

Despite all of their pioneering work, amateurs are concerned over the fate of their spectrum at the upcoming 1992 World Administrative Radio Conference (WARC). Hams are particularly fearful that the need for commercial satellite spectrum may adversely impact their frequency allocations.

Specifically, the FCC is planning to establish a LEO (Low Earth Orbit) Satellite Service and a home must be found for it. It's ironic that the message store-and-forward concept to be employed on LEO was developed in the amateur service by AMSAT, the Radio Amateur Satellite Corporation.

As mentioned last month, hams also face possible losses of spectrum at two meters, 420 MHz and 2.4 GHz - all very critical to the future amateur space effort.



One aspiring ham is Wayne Heinen, an officer in the National Radio Club and contributor to the "Bandscan" column. Wayne sent us a snapshot of his monitoring station, which includes a Drake TR-7 he inherited from his late father, W2SIC. He hastens to add, "I'm currently using the Drake as an RX only and am taking a Ham class through the

Aurora (CO) Repeater Association. So that I'm not accused of any 'bootlegging'(!), when the rig gets fired up it will be on the proper band with the proper FCC license."

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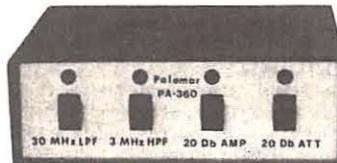
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DX Tips

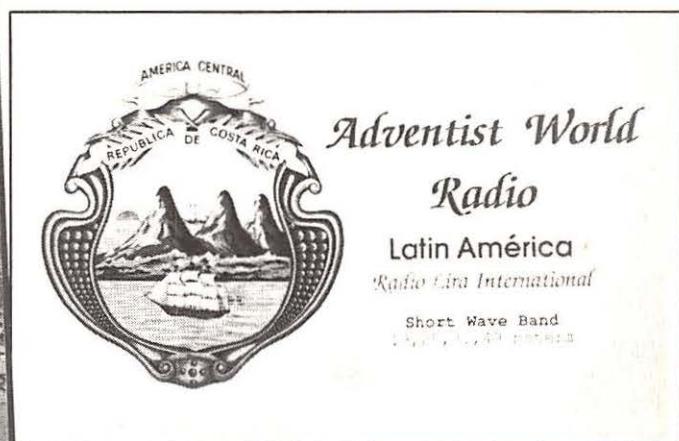
ANTARCTICA - Y8POL, Gunther, has been appearing almost daily on the "Friendly E.T." DX net, 14160 kHz, at 2330 UTC. QSL's for his operation are handled by Sigfried Giedel, Oststr 55, 0-9250, Mittwieda, Germany.

BENIN - If you need this country on RTTY try TY1PS (Peter Schulze, B.P. 06-2535, Cotonou, Benin) between 21083 and 21098 kHz daily starting at 2130 UTC.

CANADA - Throughout the month of February, hams in Canada can celebrate the Canadian Winter Games using the following special prefixes in place of their normal ones, as apply to their call area: VE1=CG1, VE2=CG2, VE3=CG3, VE4=CG4, VE5=CG5, VE6=CG6, VE7=CG7, VE8=CG8, VE9=CG9, VE10=CG10, VE11=CG11, VE12=CG12, VE13=CG13, VE14=CG14, VE15=CG15, VE16=CG16, VE17=CG17, VE18=CG18, VE19=CG19, VE20=CG20, VE21=CG21, VE22=CG22, VE23=CG23, VE24=CG24, VE25=CG25, VE26=CG26, VE27=CG27, VE28=CG28, VE29=CG29, VE30=CG30, VE31=CG31, VE32=CG32, VE33=CG33, VE34=CG34, VE35=CG35, VE36=CG36, VE37=CG37, VE38=CG38, VE39=CG39, VE40=CG40, VE41=CG41, VE42=CG42, VE43=CG43, VE44=CG44, VE45=CG45, VE46=CG46, VE47=CG47, VE48=CG48, VE49=CG49, VE50=CG50, VE51=CG51, VE52=CG52, VE53=CG53, VE54=CG54, VE55=CG55, VE56=CG56, VE57=CG57, VE58=CG58, VE59=CG59, VE60=CG60, VE61=CG61, VE62=CG62, VE63=CG63, VE64=CG64, VE65=CG65, VE66=CG66, VE67=CG67, VE68=CG68, VE69=CG69, VE70=CG70, VE71=CG71, VE72=CG72, VE73=CG73, VE74=CG74, 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Radio Korea



Left: Radio Korea QSL from Brian Johnson of San Diego, CA. Above, Radio Lira Int'l QSL sent by John Flake of Charlotte, NC.

AIRCRAFT TRAFFIC

Carnival 101, N8861E (Boeing 727-200), 11396 kHz. Full data prepared card verified by F. N. Peters, chief pilot. Received in 43 days for an English utility report, a prepared QSL card, and U.S. mint postage. Aircraft address: c/o Carnival Airlines Inc., 1815 Griffin Rd., Suite 205, Dania, Fla. 33004 (Patrick O'Connor, Hinsdale, NH)

BULGARIA

Radio Sofia, 15330 kHz. Full data scenery QSL card, without verification signer. Received in 56 days for an English report. Station address: c/o English Section, 4 Dragan Tsankov Blvd., Sofia, Bulgaria. (Sam Wright, Biloxi, MS)

COSTA RICA

Adventist World Radio/Radio Lira International, 9725 kHz. Full data QSL of Costa Rican Coat of Arms, verified by David L. Gregory, general manager. Received in 49 days for an English report and two U.S. mint postage. Station address: AWR-Latin America, Radiodifusora Adventista, Apartado 1177, 4050 Alajuela, Costa Rica, Central America. (Nicholas P. Adams, Newark, NJ)

CZECHOSLOVAKIA

Radio Prague International, 7345/11680 kHz. Full data scenery card, verified by Karel Statney. Received in 38 days for an English report and one IRC. Station address: 12099 Praha 2, Vinohradská 12, Czechoslovakia. (John Carson, Norman, OK)

EGYPT

Radio Cairo, 9475 kHz. Full data scenery card of Cairo's skyline along the Nile, verified by Rita. Received in 189 days for an English report and one IRC. Station address: English Service to North America, P.O. Box 1186, (or P.O. Box 566) Cairo, Arab Republic of Egypt. (Tim J. Johnson, Galesburg, IL)

NORTHERN MARIANA ISLANDS

Saipan-KHBI, 15275 kHz. Full data antenna card, verified by Tic Kherey. Received in 27 days for an English report sent to Boston address: Station address: World Service/Herald, P.O. Box 860, Boston, Mass. 02123. (Nicholas P. Adams, Newark, NJ)

SHIP TRAFFIC

Godfather-WYT-9130 (tugboat) 82942 kHz. Full data prepared card verified by L.A. Teague. Received in 13

days for an English utility report, a prepared QSL card, and U.S. mint postage. Ship address: c/o Jackson Marine Corp., P.O. Box 4240, Houston, Texas 77210 (Patrick O'Connor, Hinsdale, NH)

Nordic Empress-ELJV77 (cruise ship) 41126 kHz. Full data prepared card verified by Julio Elizao. Received in 13 days for an English utility report, a prepared QSL card, and U.S. mint postage. Ship address: Royal Caribbean Cruise Line, 903 South America Way, Miami, Fla. 33132 (Patrick O'Connor, Hinsdale, NH)

Pacific Javelin-HO-3725 (tug supply) 164631 kHz. Full data prepared card, and ship info sheet verified by Captain Ashley. Received in 560 days for an English utility report, a prepared QSL card, and one IRC. Ship address: Swire Pacific Offshore, 7th Floor, Swire House, 9 Connaught, Road Central, G.P.O. Box 1, Hong Kong. (Patrick O'Connor, Hinsdale, NH)

USCG Barque Eagle, NRCB, 6472 USB, (6473.9 RTTY). Full data ship/coast guard logo postcard, verified by RM1 Kolleen Schmitt. Received in 45 days for an RTTY utility report. Ship address: c/o Commanding Officer, USCG Barque Eagle (WIX-327), FPO New York, NY 09568-3906, or c/o USCG Academy, New London, CT. J6320-4195 (Sam Ricks, Philadelphia, PA)

USNS Tanner, NTNR, 156.65 MHz. Full data prepared card verified. Received in 135 days for an English utility report, a prepared QSL card, and U.S. mint postage. Ship address: c/o Oceanographic Unit Two, FPO, New York, NY 09501-7102 (Hank Holbrook, Dunkirk, MD)

M/V Nanticoke-VCQL, 156.65 MHz. (bulk carrier) Full data prepared card verified, and Canadian pennant. Received in 47 days for an English utility report and 45 cent mint postage. Ship address: c/o C.S.L. Group Inc., 759 Victoria Square, P.O. Box 100, Montreal, Quebec, H2Y 2K3, Canada. (Hank Holbrook, Dunkirk, MD)

Yamashiro Maru, JT1D, 156.65 MHz. Full data prepared card verified. Received in 75 days for an English utility report, a prepared QSL, and return postage. Ship address: Yamashita-Shinnihou Steamship Co. Ltd., Palaceside Bldg., 1-1, 1 chome Hittosubashi, Chiuoda-ku, Tokyo 100, Japan. (Hank Holbrook, Dunkirk, MD)

SOUTH KOREA
Radio Korea, 9750 kHz. Full data card of "Grandfather in Traditional dress and hat," without verification signer. Received in 42 days for an English report and two IRCs. Station address: 46, Yo-ui-do-dong, Yongdungp'o-gu, Seoul 150, Korea. (John S. Carson, Norman, OK)

SPAIN

Radio Exterior De Espana, 9630 kHz. Full data QSL card, with illegible signature. Received in 38 days for an English report. Station address: Apartado 156.202, 28080 Madrid, Spain. (Nicholas P. Adams, Newark, NJ)

SWITZERLAND

Swiss Radio International, 9650 kHz. Full data Swiss scenery card, without verification signer. Received in 25 days for an English report. Station address: Swiss Broadcasting Corp., CH-3000, Berne 15, Switzerland (Frank Hillton, Charleston, SC)

SYRIA

Radio Damascus, 12085 kHz. Full data map/logo card, sent via registered mail, with illegible signer. Received in 20 months for an English report. Station address: Syrian Broadcasting and Television Organization, Ommayad Square, Damascus. (Tim J. Johnson, Galesburg, IL)

TURKEY

The Voice of Turkey, 9445 kHz. Full data scenery QSL card, without verification signer. Received in 17 days for an English report. Station address: Turkish Radio-TV Corp., PK 333-06.443, Yenisehir, Ankara, Turkey (Nicholas P. Adams, Newark, NJ)

UNITED STATES

United States Coast Guard Group, NMF-2, 156.8 MHz. Full data prepared card verified. Received in 12 days for an English utility report, a prepared QSL card, and U.S. mint postage. Station address: c/o U.S. Coast Guard Group, Woods Hole, Mass. 02543-1099. (Hank Holbrook, Dunkirk, MD) Kudos to Hank. This station was his most distant VHF Coast Guard station QSed -- at 360 air miles.--ed.

WHK-Cleveland, Ohio 1420 AM. Partial data personal letter, verified by Tammy L. Briggs, program assistant. Received in 110 days for an English AM report and a self-addressed stamped envelope. Station address: Statler Office Tower, 1127 Euclid Avenue, Cleveland, Ohio 44115 (Russ Hill, Oak Park, MI)

WKNR-Broadview Heights, Ohio 1220 AM. Partial data personal letter, verified by David M. Marcis, technical operations manager. Received in 50 days for an English report and a self-addressed stamped envelope. Station address: 9446 Broadview Road, Broadview Heights, Ohio 44146. (Russ Hill, Oak Park, IL)

VENEZUELA

YVTO, Caracas, Standard Time Frequency Station, 5000 kHz. Full data "Observatory Drawing" card verified by Jesus A. Escalona, and letter from Fernando Aranda Griman. Received in 53 days for a Spanish report and one IRC. Station address: Observatorio Naval Cagigal, Apt. 6745, Marina 69-KHN, Caracas, Venezuela. (Patrick O'Connor, Hinsdale, NH)

YUGOSLAVIA

Radio Yugoslavia, 15105 kHz. Full data QSL card, without verification signer. Received in 50 days for an English report and one IRC. Station address: P.O. Box 200, Hilendarska 2, 11000 Beograd, Yugoslavia. (Nicholas P. Adams, Newark, NJ)

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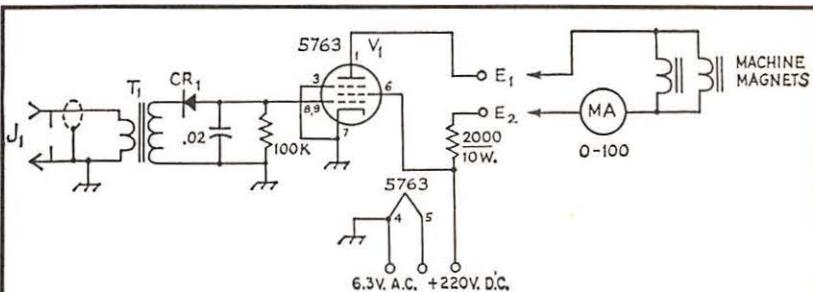
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The U.S. Information Agency

The mystery has been solved. Last month I reported an RTTY transmission in Arabic on 10.235 USB and 10.236 USB using 75/75R. Both frequencies appeared to be used for a frequency diversity system. A few days later I copied the same signal and recognized it as the USIA (United States Information Agency).

The USIA has been around for a long time. As a matter of fact, they run the VOA (Voice of America). Some of the transmitters are located in Greenville, N.C. They usually transmit news but in the mornings they communicate with overseas VOA relay sites on other frequencies.

By the way, if you tune your ICOM R71 just right, you can switch from upper to lower sideband (switching between



This circuit can be duplicated using solid-state devices

Table 1
USIA and VOA RTTY Channels

Frequency	Call	Location	Baud/Shift	Use
6915.0	VOA	WASHINGTON	75/450R	USIA
6943.1	VOA	KAVALA	75/425	USIA
7478.0	VOA	MONROVIA	75/425	USIA
9300.0	VOA	PRO, PHIL	75/425	USIA
9855.1	VOA	TANGER	75/425	USIA
9855.1	VOA	ISMANING	75/425	USIA
9870.0	VOA	PORO	75/425	USIA
10234.2	VOA	GREENVILLE	75/850	USIA
10235.1	VOA	GREENVILLE	75/75	USIA
10383.1	VOA	GREENVILLE	75/75	USIA
10410	VOA	KAVALA	75/425	USIA
10456.1	VOA	GREENVILLE	75/850	USIA
10880.0	VOA	WASHINGTON		
10881.2	VOA	RHODOS	75/425	
10950.0	VOA		75/425	
10970.0	VOA	TANGIER	75/425	USIA
10972.0	VOA	WASHINGTON	75/425	USIA
11150.0	VOA	GREENVILLE	75/425	USIA
11477.0	VOA	LA UNION, P.I.	75/425	
11490.0	VOA	PORO, P.I.	75/450	
13770.0	VOA	PORO	75/425	USIA
13992.5	VOA	MONROVIA	75/425	USIA
14526.5	VOA	PORO	75/425	USIA
15717.0	VOA	GREENVILLE	75/75	USIA
15750.0	VOA	GREENVILLE	75/850	USIA
15752.0	VOA	GREENVILLE	75/850	USIA
16247.7	VOA	TANGIER	75/75	
18215.0	VOA	GREENVILLE	75/425	
18267.2	VOA	KAVALD	75/75	
18518.3	VOA	MONROVIA	75/170	
18603.9	VOA	GREENVILLE	75/75	
18603.9	VOA	DAVIDSONVILLE	75/100	
19076.0	VOA	TANGER	50/170	
19532.0	VOA	GREENVILLE	75/425	
19794.0	VOA	MALOLOS, PHIL	75/425R	USIA
19914.8	VOA	PORO, PHIL	75/425	USIA
19915.0	VOA	TANGER	75/425	USIA
19933.7	VOA		75/425	USIA
20061.1	VOA	GREENVILLE	75/75	
20127.1	VOA	GREENVILLE	75/75	
23700.0	VOA		75/425	
24180.0	VOA	SELEBI, PHIL		

10.2321 USB and 10.2351 LSB and copy both RTTY frequencies provided you switch your M7000 from REV to NORM.

Table One provides a list of frequencies that were used by the USIA and VOA in the past.

The Great RTTY Contest

I like to save old *QSTs* that have articles on RTTY. I came across one at the last hamfest in my area. It has an article about "RTTY Reception for Beginners" and the magazine is dated March 1965. The article talks about and shows how to build a one-tube RTTY decoder.

You remember what tubes are, don't you? Those glass things that light up and you get burnt when you try to unplug them. You can also get electrocuted if you touch the wrong thing.

The article goes on about how you can tune to one of the signals pulses (preferably the mark pulse) in order to copy RTTY. The decoder was actually a diode which rectified and an amplifier tube which amplified the audio mark tone.

The receiver was zero beat to the space tone which resulted in no signal while it was present; thus nothing was amplified by the tube. The mark, however, produced a tone that was rectified by the diode and amplified by the tube. The tube provided the loop current that was needed to drive the TTY machine. The decoder was actually an OOK or "On Off Keyed" decoder which was used in the early years of RTTY.

After reading the article, I thought, "Gee, these days you can build that circuit using solid-state devices like Op amps. Most parts would be available from Radio Shack."

I would like to propose the following:

1. If you like to tinker with electronics, try to redesign the circuit shown above using solid devices or ICs. It should interface to a computer instead of a TTY machine. I built one and it does work even at 170 Hz shift (but not as good as the M7000).
2. It must be kept simple so that beginners can build one. It should interface to an IBM or clone, or a Commodore 64 computer. You should use public domain software so that it can be shared with others.

If you submit the schematic and a brief explanation how it works to the RTTY column, c/o *Monitoring Times*, it will be judged by the simplicity and functionality (how well it works). The winner will receive a prize valued at \$20.

I figured this would be a great way to spend the few winter months ahead and your entry may benefit a beginner to the exciting world of RTTY. Entries must be in by May 1. The winner will be announced in the July issue.

NNN

Weather Satellite Handbook

Monitoring weather satellites is a hobby in its own orbit. These old birds are the original workhorses of satellite era, first seeing service in early 1960 with the TIROS series. During the ensuing 30 years, the electronics revolution has allowed not only more sophisticated weather data gathering systems but enabled individuals to participate in their reception.

Just as the past 10 years has seen the collapse of TVRO earth station prices from tens of thousands of dollars per installation to one-tenth the cost, so too have we seen the price of weather facsimile (WEFAX) equipment fall to within reasonable levels.

Where the birds are

In TVRO, all our domestic C and Ku band satellites are located in geosynchronous orbit and require only one installation to receive both. Weather satellite reception isn't quite that simple. To start with, there are two types of weather satellites: the geosynchronous or stationary satellites and the near-orbit or polar orbiting satellites. Each requires the use of a different antenna.

While geosynchronous birds can be found with ease, polar orbiters will require more skill in tracking. Luckily, available software allows one to toggle from a polar orbit VHF antenna to the fixed 1.6 GHz dish with the touch of a keyboard. And using widely available orbiting data known as Keplerian element sets, even the polar orbiters are easier to track.

Receiving pictures

Virtually all the physical parameters and limitations which concern setting up a TVRO system apply as well to setting up WEFAX satellite receiving systems. For example, you'll need a clear shot at the satellite you wish to receive. Things that get in between your dish and the satellite -- tall buildings, trees, and so forth -- will prevent you from "seeing" these birds.

A dish with a minimum four foot diameter is required for the same reason. It is necessary to get the best possible carrier to noise ratio (C/N) for best results. The feedhorn/down-converter must be set to the correct focal length for best illumination of the reflector.

As for receivers, there are many options. The temptation is to make your existing monitoring gear serve double duty as S band WEFAX satellite receivers. The MX5000, R7000, or PRO 2004, '5 and '6, among many others, cover the frequency range, but, while they are all excellent radios in the service for which they were designed, they won't

necessarily be excellent WEFAX receivers or even decent WEFAX receivers.

Still, an experimenter can have some fun trying to make various shortwave receivers, scanners and the like work in this specialized installation.

First, you should know that while GOES WEFAX is downlinked on 1691 MHz, the signal is usually downconverted at the feed to 137.50 MHz. It would seem that any radio tuning 137.50 MHz would work for picking up WEFAX, but there are considerations. Chief among these is proper bandwidth. This is why commercially made satellite receivers designed to do the job properly are recommended.

Enter Weather Satellite Handbook

It doesn't take much investigating to realize that monitoring WEFAX requires some serious research. Luckily for all of us, the last word on the subject of weather satellites has been penned by Dr. Ralph E. Taggart, WB8DQT, in the fourth edition of his book *The Weather Satellite Handbook*.

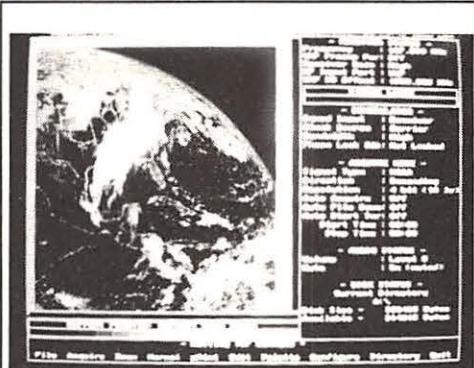
Dr. Taggart, whose PhD is in paleobotany, has been updating the handbook since 1976. This latest edition covers every facet of the hobby, from a description of the satellites to operating the complete station. In between is a gold mine of information gleaned from years of involvement. You'll find complete plans for building an omnidirectional VHF antenna for 1.6 GHz; details on all manner of receivers, video formats, satellite tracking, and building and operating a scan converter to interface between your receiver and computer for video display of WEFAX and polar orbit images.

But wait, there's more

The Weather Satellite Handbook explains satellite tracking, including a simple computer tracking program to calculate "pass windows." The handbook is full of excellent photos and clear line drawings to support the informative text. Here you'll find information on WEFAX computer bulletin boards and a satellite amateur user group publication.

The final 17 pages of the book are full advertisements. While ordinarily one would regard advertisements in a book as a bit much (unless the book is free), in this case they are actually an asset. These feature pictures, descriptions and diagrams of various hardware, software and related products pertinent to weather satellite reception. It provides, in essence, a nifty market place for the WEFAX hobbyist.

The Weather Satellite Handbook is the place from which anyone interested in this



Video Display as seen on computer monitor. Left on screen is actual satellite image, right on screen is display of receiver parameters. At bottom is list of keyboard commands including a zoom feature which brings image to full screen and enlarges four selected regions of picture. Photo by author from disk courtesy GTI Electronics.

adjunct of the monitoring hobby should start. It is the companion to any who have a need to understand every facet of WEFAX technology. If you were not interested in weather satellite reception before, this book will make you wonder why you waited so long. *The Weather Satellite Handbook* is published by the American Radio Relay League and is available from your favorite ham radio bookstore.

Other valuable sources

An excellent source of information and equipment for weather satellite reception is GTI Electronics. (See their ad in this issue.) George T. Isleib, the GTI of the business, is a breathing encyclopedia on the subject. He's always happy to answer your specific questions on every aspect of weather and related satellites. Write or call GTI:

GTI Electronics, 1541 Fritz Valley Road, Lehighton, Pa. 18235. Phone 717-386-4032 or FAX 717-386-5063.

Here are other sources of products on WEFAX reception:

Atlantic Surplus Sales, 3730 Nautilus Avenue, Brooklyn, N.Y. 11224; 717-372-0349
Quorum Communications, Inc., 1020 S. Main Street Suite A, Grapevine, Texas 76051; 817-48804861, FAX 817-481-8983

Wilmanco, 5350 Kazuko Ct., Moor Park, Calif. 93021; 805-523-2390, FAX 805-523-0065

Marta Systems, 15500 W. Telegraph Rd. A4, Santa Paula, Calif. 93060; 805-933-1270, FAX 805-933-1792; Satellite Services: 805-525-GOES

MAILBAG

Monitoring the Armed Forces network

Peter Hanzal of Largo, Fla. enclosed a catalog from a mailorder microwave antenna company with a question about the feasibility of using the system for 1537-1542 MHz AFRTS reception.

It's a good question, Peter. I wrote for the same catalog with similar questions in mind. To get an idea of the type units to which I am referring look in the classified ads of the mass-market electronics magazines.

Unfortunately, these "dishes" are designed for use in the 1900-2700 MHz range which would exclude its use for INMARSAT use. In addition, the 20 inch dish, while useful for purposes for which it was designed, will not be adequate for satellite reception. Point-to-point distribution services, the so-called wireless cable service (2150-2160 MHz) or TV relay service (1990-2110 MHz) can be readily received on these systems.

To expect reception from space is asking too much. The real question is "Where can I find equipment for AFRTS on INMARSAT?" The answer is that the equipment is not commercially available. It should be possible to homebrew your own system. Information can be found in the above-mentioned *Weather Satellite Handbook*, the *Satellite Experimenter's Handbook* and the *ARRL Handbook*, both available from your favorite ham radio bookstore. The *ARRL Antenna Handbook* also has quite a bit of good material on the subject of amateur satellites.

Satellite delivered radio nets

Joseph Johnson of Savannah, Georgia, wants to know about Business Radio Network (BRN) and Financial Business Network (FBN). He would also like a list of satellite delivered radio networks.

Joseph, I looked through the latest edition of Westsat Communications Satellite Channel Chart and could not find either of the two radio networks you asked about. However, I've monitored the Business Radio Network on W4,3 SCPC/FM where it resides full time.

As far as lists go, any satellite TV guide will have a list of all FM audio subcarriers on satellite but none of them have a list of SCPC services. The big reason for this is that there are no standard receivers to which frequency lists would correspond. Secondly, these services do hop about with regularity and lists would quickly go out of date.

What's NAVSTAR?

Rob Cave of Princeton, Texas, would like some information on NAVSTAR.

NAVSTAR is the name given a series of global positioning satellites. These satellites carry extremely accurate atomic clocks. The combination of many of these satellites, each transmitting their own precise location (latitude, longitude and altitude) and the exact time to any point on the ground can give the receiving station a "fix" on its exact global position. These signals are transmitted at 1575.42 MHz.

An excellent description of the NAVSTAR program is found in *Communications Satellites*, by *Monitoring Times*' Ute World editor, Larry Van Horn. The book is published by Grove Enterprises.

TRANSPONDER NOTES

✓ After nearly ten years of service, Westar 4 is fading quickly. So quickly, in fact, all PBS services have been forced to move to Spacenet 1, not exactly a new bird itself. Nonetheless, all the residents at W4 have sought shelter. That includes NPR and the rest of the SCPC services. Big question is where will BBC "Six O'clock News" show up?

WEATHER SATELLITE HEADQUARTERS

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International Cablecasting Technologies, Inc. (ICT) has disappeared from F4, 19 after being absorbed by Jones Intercable to form SuperRadio. ICT still expects, however, to launch its Digital Express with its special digital tuners made by Scientific-Atlanta in full production by March.

The recession is said to be slowing industry growth. Projects which looked like they were certain have been put on hold. Among these are digital audio services, large scale HDTV experiments and new program services.

✓ A second Ku DBS service debuts this month. Utilizing the brand new SBS 6 (99 degrees W) SkyPix occupies all odd transponders from 1-19. SkyPix joins PrimeStar GE K1 (85 W) and TVN on T303 in a bid for the uncertain DBS market. It's a rough time to be starting any new business venture and it will be interesting to see which, if any, are still around at the end of the year.

✓ Those who have TVRO systems are familiar with Green Sheet (S1,21) which airs Thursday evenings 9-12 p.m. ET. Those who aren't should know that they are a source for used TVRO gear at reasonable prices. Equipment changes constantly but a call should bring information on what's available currently. Phone 201-707-1800 during business hours.

This is the same transponder on which Satellite Market USA has a live billboard advertising TVRO gear and programming. Their office hours are 8:30-4:30 p.m. ET. Phone 201-996-4000.

Another TVRO direct sales channel is USA Direct (T302,17). They also offer a wide variety of TVRO and related electronic gear. Call them at 800-822-1179.

And finally, the oldest still running home shopping channel directed at home dishes, besides the Sky Store, is Shop At Home (F4,15). Call them at 800-366-4010.

WSBS' Secret of Success

WSBS loves broadcasting in the Berkshire Mountains of Massachusetts and people love to listen. Drop by any home near Great Barrington in the morning. You'll smell coffee brewing, see a beautiful sunrise, and probably hear WSBS on the radio.

Public service is the secret of WSBS, but it requires an occasional call to duty. Program Manager Bob Collins remembers a recent episode: "I got home, and I had just put the kids to bed. I started talking to my wife and I get a call from an announcer at the station. He tells me that the police just called and said they needed our mobile unit in a hurry. I said 'Why?' and he replies 'They didn't say. Just be there.'

"Well, I check the scanner and it's going nuts. I discovered that it was a mock disaster drill. I started thinking 'There's a lot of communities that wouldn't include the local radio station. They consider us part of their public safety network.' I felt a lot better about it then."

There is no limit to what WSBS will do for its audience, or how their listeners will support the station. "We did a radiothon for The Jimmy Fund (a charity for children). We asked people to drop by, have a free hot dog, and drop a couple bucks in. We were shooting for \$1200. We raised over \$21,000. It was unbelievable."

Last year, WSBS morning host Nick Diller camped out on the roof of Aldos Market for 36 hours to raise money for the homeless. When the local fire department finally lifted him down, \$11,350 had been collected. These events help everyone. Charities love the contributions, and WSBS continues to create a positive image with their audience.

Small local radio stations can be very successful, but it takes endless dedication and commitment to your listeners, and good management of your resources. Learning these skills has become a necessity during difficult economic conditions in the 1990s, and Collins has become an expert. "You can't be a part of the community only while you're at the radio station. If you're really involved in the organizations and the meetings and taking the lead in community fund raising, then you can't help but know what your listeners want and need because you are the community. You become a mirror of who they are."

Looking for new advertising dollars, Collins said, "In the last year, as the economy started to sour, the banks went completely out of the picture. The auto dealers are suffering. Most of Berkshire County has been in a recession for at least a year. General Electric closed their big plants in nearby Pittsfield, and they were our largest employer."

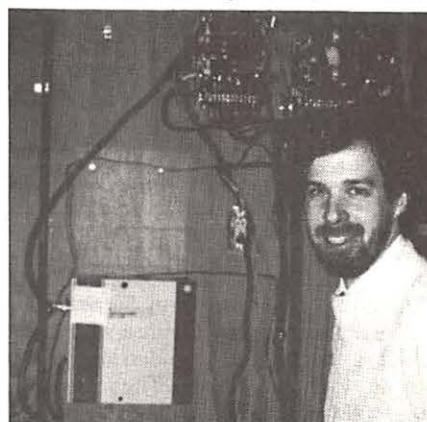
Collins had to aim his sales staff in new directions. "The area is now more tourism and service oriented, so now we advertise a lot of small shops." WSBS has cut expenses but, says

Collins proudly, "we haven't cut people."

One technique in securing advertisers and their success is to promote them en masse. Public service announcements are regularly aired on WSBS asking listeners to save time on trips to nearby cities by shopping locally. "Why be stuck in traffic on Route 7 when you don't have to?" one announcer asks. The mutual support keeps the local economy healthy.

New technology has played its part, too. "We've increased our productivity a bit by going to a computer. The newsman used to spend 10 or 15 minutes going through wire service news feeds and then threw out 90 percent of the paper. Paper now costs thirty dollars a box." Every penny counts when you're running a small business.

WSBS doesn't just sit back and soak in its success. Bob Collins keeps one eye toward the



Program Manager Bob Collins stands next to the small but feisty LPB 3.9 watt transmitter.

future as well. Collins cites the example of McDonald's. "McDonald's sells Happy Meals," he points out. "And they don't make a cent on it but they get people at a very young age to come to McDonald's. You can do the same thing with a local radio station. We do a lot of high school football games, for example, and whenever the snow falls everyone listens to their AM radio. That's good programming, but it's also an investment in 10, 15 or 20 years from now."

News is a very important part of their broadcast day. At noon, the WSBS Midday Extra hits the air with newsman Tom J. at the controls. It is a very ambitious compilation of world, national and local news and sports, with extensive coverage of meetings and work sessions in the towns and villages throughout the county. Each area reports its news, presented by a local reporter or resident. The broadcast is extremely comprehensive and thorough. It's no wonder that WSBS was Massachusetts Small Station of the Year in 1989. Many high school sports events and Boston Red Sox baseball games make regular



20 year veteran morning man Nick Diller shows off the Harris SX-2.5A transmitter.

appearances on the station, too.

Radio stations who rely solely on satellite delivered programming should stay away from Bob. "Those people are unfit to hold a radio license. I wouldn't deal with them at all, and I believe that the communities won't deal with them at all in the long run. It's a juke box, not a local radio station. That person is saying that he can't make money doing local radio. That's just bad management."

Musically, the station is pleasantly eclectic. "The music obviously has to have some mass appeal to it because we are the community radio station. On the other hand, there's a lot of really good music out there that can be classified as commercial that never makes the charts. The best example we have on the air right now is the new George Benson CD with the Count Basie Orchestra. It's just a great CD, and none are playing it except jazz stations. Another one is the new Paul Simon CD which a lot of adult-contemporary programmers are shying away from because it has ethnicity in it. We include that."

"People always ask me what the format is and they're really asking what is the classification of the music you play. You have to get out of this formatics habit." Bob Collins' ideas must be working since his station is "in the black" when others all around him are falling.

Look for WSBS on 860 kHz, from 5:30 a.m. to midnight, using three different transmitters. During the day, a state-of-the-art Harris SX-2.5A, producing 2700 watts, sends their signal up to 100 miles away. An old Gates BC 250 GY is used to decrease power to 250 watts during critical hours.

Toronto's CJBC, a 50,000 watt French language variety station, also operates on 860 kHz and their signal must be protected at night. Therefore, WSBS is required to lower their power during evenings and early mornings to a mighty 3.9 watts that works surprisingly well. An Orban Optimod-AM equalizing limiter keeps their sound full and bright.

WSBS is part of a four-station group: the Berkshire Broadcasting Company that also

Be an American BandScan Reporter.

See any stories about radio in the local paper? Send them to Monitoring Times, P.O. Box 98, Brasstown, NC 28902.

operates WSBS sister station WBBS-FM and WNAW and WMNB-FM in North Adams, Mass.

Bits 'n' Pieces

■ Sometimes your dreams can really come true. Ask Chris McCarron, the new owner of WSTT-AM in Thomasville, Georgia. She sent in a postcard and walked away with a 5,000 watt radio station as the winner of MTV's Radio Station Giveaway. "It's not a contest, it's a conquest. You could rule the world with watts and watts of power in your hands," declared the popular music video service. Chris was offered \$100,000 as a substitute prize, but she wanted to go on the air. Along with the station, McCarron won the services of punk rocker Billy Idol for a day as her first celebrity guest DJ. This could be really wild listening, especially if WSTT retains its current country and western format.

■ Looking for a job in broadcasting? All you have to do is call 900-234-INFO (4636) extension 88. A new service, called Jobphone, provides a daily nationwide listing of employment opportunities in TV, radio, advertising, and cable TV. It's two dollars a minute to listen, so don't forget your pencil.

■ If you need an excellent guide to every FM radio station and translator in North America, check out the latest edition of the *FM Atlas* by Bruce Elving. A new edition just out contains 92 pages of maps to pinpoint station locations, and another 100 pages of listings by frequency and location. It's a must for any FM listener. Just send \$10.95 plus 90 cents postage for USPS book rate or \$2.30 for UPS to: DX Radio Supply, P.O. Box 360, Wagnontown, Pa. 19376.

New Station Grants

Just when you thought that they couldn't squeeze another station onto the dials, more appear. Here's the latest additions, courtesy of the *M Street Journal*: Eufaula, AL 97.9; Big Bear City, CA 93.3; Essex, CA 98.9; Ledyard, CT 106.5; Panama City, FL 89.9; Rockford, IL 95.7; Fort Wayne, IN 92.3; LaGrange, IN 105.5; Ligonier, IN 102.7; Herington, KS 96.3; Poplar Bluff, MO 103.5; Lisbon, NH 96.7; Bay Shore, NY 103.1; Erie, PA 94.7; Slippery Rock, PA 88.1; Socastee, SC 99.5; Memphis, TN 89.3; Corpus Christi, TX 94.7; Hartford, VT 104.3; Bedford, VA 106.9; Barrackville, WV 93.1; and Spencer, WV 104.7.

For Sale

If you are looking for your first radio station with very reasonable terms, this might be the one. KAVI AM and FM in Rocky Ford, Colorado, is being offered for \$165,000. A power upgrade is currently available for the FM operation. Financing is available through the absentee owner who is very anxious to sell, and no down payment is necessary. Contact Kim Love at 307-672-7421 or 307-674-7878 evenings.

beautiful upper peninsula, show me in writing that you can provide \$200,000 in cash and I'll show you how to get the job done." Write to 102 East Main Street, Madison, Wisconsin 47250 to take advantage of George's offer.

Country music fans take notice. Why not buy a Class A FM station, with a construction permit to increase power to 50,000 watts? It's located between Jackson and Nashville, Tennessee, right near the Loretta Lynn Dude Ranch. The current owner has to sell quickly due to health reasons. Price is \$200,000, and terms are available to experienced broadcasters with good credit and bank references. Write to: B. Coleman Jr., WIST Radio, P.O. Box 460, Lobelville, TN 37097.

International Bandscan

■ In Egypt, mediumwave services have been expanded and reorganized. The Voice of the Arabs is now broadcasting 24 hours a day on 621 kHz, and can also be found on 1008 and 1107 kHz as alternate frequencies during evening hours. ■ Egypt's General Program uses 819 kHz continually, and The Middle East Program calls 774 kHz its home from 0400-0630 and 1100-2400 UTC. ■ Also look for Nile Valley Radio on 1107 kHz, which shares its frequency with the Palestine Radio Service. ■ Radio Tirana, Albania, is now offering half-hour broadcasts in English at 1830 and 2230 UTC on 1395 kHz. ■ From Iraq, The Voice of Peace from Baghdad is sharing 1134 kHz with the Voice of Arab Awakening, using former Radio Kuwait transmitters. ■ In Lebanon, a new pro-Lebanese Forces station, The Radio Voice of the Orient, is testing on 910 kHz. ■ One of the strongest signals in East Africa is RFI Mayotte on 1458 kHz now that its power has been increased from 4 to 100 kilowatts. Excellent reception has been reported in Nairobi at night, and even during the day along the Atlantic Coast. ■ Radio Antilles, in Monserrat, left the air after Hurricane Hugo destroyed their facilities last year. A new 20 kilowatt transmitter has put the station back on the air on 930 kHz, and they have resumed relaying programs from the BBC and Deutsche Welle. ■ Many Europeans are familiar with the BBC's powerful World Service outlet on 648 kHz, broadcasting in English French and German. BBC 648 has recently adopted a new name: BBC for Europe.

Credits: Thanks to readers Rick Dodds, Mike Westdal, W. Earle Doan, Ron Carruthers, Malcolm Kaufman, Ken Hydeman, Jack Montgomery, Harold Bower, John Carson, George Bechtol. Also, thanks to the Associated Press, Gannett News Service, the *M Street Journal*, *Broadcasting Magazine* and the British DX Club. Happy Ground Hog Day and happy trails.

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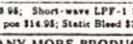
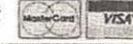
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RADIO TESTS

Below are several tests arranged by the National Radio Club. If you'd like more information on NRC and BCB DXing please send \$1 to the National Radio Club, P.O. Box 118, Poquonock, CT 06065.

KBYR-700, P.O. Box 102200, Anchorage, AK 99510 will test on Monday morning Feb 4, 1991, from 0400-0430 EST. Will include Morse code IDs. Thanks to A.G. Hiebert, Chairman/CEO.

WABS-780, 5545 Lee Highway, Arlington, VA 22207 will test on Monday morning Feb 11, 1991, between 0000-0100 EST. Will include Morse code IDs. Thanks to Bill Ashley, Chief Engineer.

KOTZ-720, P.O. Box 78, Kotzebue, AK 99752 will test on Monday morning Feb 11, 1991, from 0401-0500 EST. Will consist of tones, Native American and modern music. Thanks to Pierre A. LoneWolf, Chief Engineer.

WLIM-1580, Woodside Ave., Patchogue, NY 11772 will test on Saturday morning, Feb 16, 1991, between 0445-0515 EST. Will include Morse code IDs. Thanks to George Drake, Vice President.

KUAI-720, P.O. Box 720, Eleele, Kauai, HI 96705 will test on Monday morning Feb 25, 1991, from 0530-0600 EST. Will include Morse code IDs. Thanks to Roger D. Rogelstad, Chief Operator.

73 Jeff Tynan & Wayne Heinen for the Colorado CPC Machine.

The Baghdad Benny Blues

Transmissions from the Middle East seem to undergo almost daily changes. The situation is that unstable. Things that are on the air one day are sometimes off the air on the next day. Such is the case of Baghdad Benny. He could be off the air. Or he could still be open for business.

These propaganda transmissions aimed at American and allied forces in Saudi Arabia are among those that monitors most want to hear. They have even attracted the attention of the general media. Unfortunately, they are among the most elusive. The choice of frequency and schedule are not the best for those of us in North America. Also, listeners must prepare to do battle with an extremely nasty and effective bubble jammer. You might hear a bunch of other miscellaneous interference as well. But don't give up. If you are persistent, and your ears can handle the challenge of those who want to cancel out Benny, he just might make it to your location one day.

Recently Benny made it here on 11869 kHz from about 2240 UTC to sign-off at 2255. His sidekick, Baghdad Betty, was also with him. If you have heard any of Iraq's regular English programs, you will recognize both announcers. These special propaganda transmissions identify with the words, "You are listening to the Voice of Peace from Baghdad."

Meanwhile, although Benny goes on, it appears Iraq is at least losing the radio war. There seem to be far fewer Iraqi transmissions around recently in either English or Arabic. I am still monitoring their English broadcast on 11830 kHz in the clear during the evening hours. Try after 0200 UTC and you should not have much difficulty.

Egypt has been noted with a strong signal in Arabic on 12050 at various times throughout the day. Iraq used to try to interfere with this. Are the sanctions forcing them to cut back? Syria, another Iraqi opponent, comes in nicely on 12085.

Meanwhile back at the VOA

We have reported previously on those Voice of America "mystery transmissions" which have popped up on both 8000 and 8030 kHz between 0300 and 0400 UTC. A VOA identification is given at the beginning and end, but the remainder of the broadcast is nonstop, normally instrumental, music. Now this is also showing up 7970 and 8060 kHz as well.

Florida's Terry Krueger suspects a couple of these frequencies may actually be spurs. In any case one cannot help but wonder what the

VOA's intention is. Why do they want to keep these frequencies open? Could there be some connection with Middle Eastern events?

More on Caroline

Last month we reported that the legendary Radio Caroline had returned to the air, having moved to 819 kHz and now anchored off the coast of Belgium. Hopefully our European readers have all heard her again by now.

Well, now we have some good news for the rest of us. Caroline is also back on shortwave. Our Dutch contributor, Ary Boender, says it has been heard testing on 6203 kHz around 0000 and 0900 UTC. IDs are given either as "The Voice of Love" or Radio Caroline.

Now here is more news. We have heard a rumor that Caroline just might be planning a relay via WWCR. As we said, at this time it is just a rumor, but with WWCR now relaying both RNI and RFNY, this certainly would appear to be a possibility.

We do get a fair amount of mail from readers who chase the Europirates and need more information. Ary Boender has three lists available, which could be of considerable help. They are regularly updated. He can provide a list of Europirates by frequency, which also indicates time most likely to be heard and probable country of origin. A second list gives addresses, and the third is a list of all offshore, usually ship-based, Europirates that have ever been active, along with the dates of their activity. Each list is \$3, which covers his postage and other actual expenses. The address is Ary Boender, Lobeliastraat 33B, 3202 HR Spijkenisse, The Netherlands.

We have also heard from Martin Lester in England who gives us some additional insight on how things look on the other side of the Atlantic. He has had considerable success logging a number of pirates on shortwave. Among his recent catches are the 18th anniversary program of England's Radio Gemini on 6220, Ireland's Jolly Roger Radio on 6305, and Wonderful Free Radio London on 6315. Martin also monitored Radio Stella from Scotland on 6320. This one is sometimes heard in North America, and is worth trying to log.

Coming across the channel from the European mainland were the French Radio Waves International on 7441, Italy's Voice of Europe on 7520 (North Americans can sometimes find this on 7538), and the Dutch Radio Brigitte on 7490. UTC Sunday mornings are the best time to seek out the Europirates regardless of which side of the

Atlantic is your home. Martin also logged eight FM pirates, mostly in the Birmingham area, which has long been an English hotbed of unlicensed radio activity.

The Domestic Scene

Monitoring Times readers continue to have much success logging a variety of stations. We start out by applauding Tom Roche of Georgia for coming across one that is not heard too often. Tom found the Voice of the Purple Pumpkin on 15049.5 at 2242. Earlier at 2215 he had Radio USA on just about the same frequency, 15049.7. At 2230 in the same spot Radio Samurai, The Voice of Oriental America, signed on.

Up in Michigan Harold Frogge bagged the Voice of Oz in upper sideband (USB) on 7410 at 0239. One Voice Radio showed up at 0040 on 7413.

Harold also found a Colombian clandestine switching frequencies between 6275 and 6295 at 0112. Most likely this is not Radio Patria Libre, which has been around for awhile, but a relatively new station. According to clandestine expert George Zeller, it sometimes identifies as "Del Pueblo Responde" (the people respond) and is intended to jam Patria Libre. On one occasion I heard it doing battle with a music jammer.

From Virginia Pat Murphy writes to report his latest in what is now a long list of pirate catches. Pat had the Canadian pirate CFBN at 0214 on 7415. On the same frequency he heard an ID for WHO (also logged by this writer) at 0119, while Radio Free Frank, Samurai Radio, and the Voice of Oz were in a QSO around 0200.

Another Virginian, Wil Gregson, reports he bagged his first pirate. It was The Free Radio Project, on 7415 with 25 watts at 0035. What made Wil's catch so unusual was that this was a pirate that operates in Morse code.

Maryland's Ron Bruckman got KUSA Radio Wisconsin on 7415 with a rather hefty 500 watts at 0600 UTC. KUSA uses both USB and LSB (lower sideband) and may be able to turn out as many as 1,500 watts. It announced a test to Europe with that power on 26000 kHz.

Minnesota's Alan Masyga continues to do quite well for himself. He had the Voice of Bob on 7410 at 0650. Radio USA is a regular at Alan's location. It turned up again at 2200 on 15050 kHz. An unusual log was KUB4 on 14313 USB at 2045 with New Wave music. Alan also added QSLs from WORK and Action Radio to his collection.

BFBS FORCES RADIO

To: William J. Bell 1122

We thank you for your reception report
12th October 1990
and confirm the details are correct.
We hope you will continue to enjoy our transmision.

RICHARD ASTBURY
STATION MANAGER

Signed: *[Signature]*

BFBS FORCES RADIO

BFBS LONDON
Bridge House
North Wharf Road
London W2 1LA
Tel: 071 724 1234
Fax: 071 706 1582

The Radio Division of
SISVIC

Bill Battles of New Hampshire received this QSL for a British Forces Broadcasting Service transmission to troops in the Middle East.

Here and There

Some very special listening should be in store for readers tuning in to Radio New York International on 7520, says Karl Zuk. On February 3, from 0200 to 0600 UTC, RNI will be hosting a special call-in show. The topic is pirate radio, and the invitation is out to all pirate broadcasters to call in their comments (800-73-69-RNI, we assume?). Should be interesting to see who checks in!

Thanks to information received from Andy Robbins, we know one station we will not hear is an FM pirate which had been broadcasting from a Kalamazoo, Michigan, restaurant on 103.7 MHz. The operator, who was busted by the FCC, is not likely to get off with just a fine. He put his station on the air with \$23,000 worth of equipment allegedly stolen from WEVS in Saugatuck, Michigan. Andy reports that KMUD (7435 kHz) in San Rafael, California, has also been closed.

ACE now has several pirate and clandestine awards for which you might wish to qualify. Certificates suitable for framing are awarded. For further information, I would suggest you send a stamped, addressed envelope to ACE Awards, R.1, Box 15A, Belfast, N.Y. 14711.

There has been much speculation in DX circles that El Salvadorean clandestine Radio Venceremos had disappeared. Some had suspected that it might have actually been located in Nicaragua and had to cease broadcasting after the Sandinistas lost last spring's election and control of the government. However, reliable outside journalists have in the past made trips to Venceremos broadcasting sites and claimed these were indeed in rebel-controlled areas of El Salvador.

Recently both the BBC Monitoring Service and the CIA's Foreign Broadcast Information Service have both made references to Venceremos, including statements by the station it is being jammed. Apparently Venceremos is still with us, but there is always the possibility it is not currently using shortwave but only mediumwave and possibly FM.

Elsewhere FBIS notes a number of unlicensed stations are being shut down in

both Bolivia and Argentina. Piracy is not a European or North American monopoly. Normally in Latin America these are commercial stations who simply take to the air without a license. Some may be in small towns or relatively remote areas, and more than one has been known to broadcast for years without any problems.

Several folks, including George Viera of New York, wrote to tell us they had monitored Radio Free New York, which is relayed by WWCR UTC Sundays beginning at 0400. Give them a listen. WWCR seems to be specializing as the "nation's relay."

Catch one of the more unusual programs on shortwave these days on another WWCR relay. This is the "Original George Klein Elvis Show," which can be found on 15690 at 1500 UTC Saturdays and on 7520 after Radio New York International signs off at 0600 UTC Mondays. "The Elvis Show" originates from WHBQ Memphis, Tennessee (560 kHz), which claims to be the first station in the world to play an Elvis Presley record.

Pardon Us if we Brag

But we are feeling a little smug after having bagged our first Ethiopian clandestine. These are never easy, but the Voice of the Broad Oromo Masses did make it here with an interval signal and sign-on announcement before fading out. Look for it on 7890 around 0355.

Terry Krueger, however, did even better. In addition to the above, he got two more. Voice of the Ethiopian People for Peace, Democracy and Freedom was the probable one on 9355 at 0355, while Voice of the Broad Masses of Eritrea showed up on 10021.39 at 0345.

Now if you get one of these you might even want to try for a QSL. I cannot promise you will have any success, but according to the BBC Monitoring Service, you just might be able to reach these stations via The Ethiopian People's Revolutionary Democratic Front, P.O. Box 710358, Dallas, Texas 75371.

Everything from Elvis to Ethiopia. Shortwave has it all.

Are you serious about your shortwave monitoring?

MT has a position for a good shortwave broadcast monitor. If interested, please contact Larry Miller, managing editor, or Greg Jordan, frequency manager.

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One Magic Moment

Thomas D. Trocchio of Medina, Ohio, had one of those rare DX days that everyone dreams of. Says Thomas, "I've been into monitoring just about everything that comes across the radio -- from RTTY to broadcast band [AM] to utes -- anything. But until yesterday morning at approximately 1300 UTC, I've had very, very limited success with monitoring much of anything besides noise and 344-CL (Cleveland) below 500 kHz.

All of that changed last month. "Today alone I've logged over 20 beacons. In over 15 years of monitoring, I've never heard such a quiet band!"

221	CDI
227	EZE
233	PDR
X 260	BYN (Bryan, Ohio)
264	MRT
269	TII
298	CC
319	XX
329	CH (Charleston, SC!!!)
330	CU
X 344	CL (Cleveland, Ohio)
X 353	QG (Windsor, Ontario)
360	IE
361	AR
X 379	F2I (Fostoria, Ohio)
383	MLR
X 388	DT (Detroit, Michigan)
400	SLW
409	HBD
X 411	VFU (Vanwert, Ohio)
X 414	PCW (Port Clinton, Ohio)
417	BKL
X 419	RY (Grosse Island, Michigan)
X 524	HEH (Newark, Ohio)

Thomas admits that "I'm not the sharpest at copying Morse code but those that I could verify via past issues of *Monitoring Times* are marked with an "X."

Located some 20 miles south of Cleveland, Mr. Trocchio uses a Kenwood R-5000 hooked to a 65 foot longwire antenna oriented north-south. His other equipment includes a Kenwood R-1000, a Grundig Satelit 500, a Grundig Majestic 3960, a Sony SW-20 and '2003 "and my good 'ol Zenith Trans-Oceanic H500."

"I often thought that my antenna was the reason for my lack of success below 500 kHz. Well, I guess I was wrong."

Fishing for Beacons

Many low frequency experimenters put their own low-power beacons on the air. For some time, there have been reports of strange transmissions containing mixed numbers and letters -- obviously not hobby beacons -- in the 1700 kHz area. Now comes an explanation from Clifford Buttschardt of Morro Bay, California, who says that these mysterious beacons are "fish net finders, often used by high seas fishermen to find the ends of floating nets -- nets that are sometimes many miles in length."

"During the summer of 1990 I had the opportunity to be employed as radio officer on a merchant ship traveling between the west coast of the United States and Japan," says Cliff, who used his time aboard the ship to do some DXing. "Here is a sample of the signals heard between 1600 and 2000 kHz. The sample was made 600 miles south of Attu Island in mid-Pacific about two hours after nightfall."

The most populated frequency for the fish net beacons is 1655 kHz. There are "dozens of calls" on this frequency, says Cliff. 1650 kHz is the second most popular with 1642.3 tied for third. Try also 1635 and 1638 kHz.

The rest of Cliff's list, listing frequency and call, as reprinted in *The Lowdown*, includes beacons positioned all through the 160 meter ham band.

1656.2	AM30	1823	JP53
1663.2	HK15	1825.6	66I
1679	OU8	1825.6	MD52
1693	MP3	1827.6	YL5I
1709	KP73	1841	N7T
1721.4	BOJC	1850.6	AB7T
1732.6	HU42	1871	MS77
1736	PQ17	1872.8	A51
1739	O3T	1907	TA1
1740	BW48	1915.3	KT3T
1746	SQRU	1921.5	TA20
1753	DK26	1935	2ST
1780	SG2T	1937.5	DJ81
1786.3	YG11	1939	DI7T
1787.5	DA1	1941.7	TA4W
1796	K4	1945	TTM
1800.2	DS45	1945.8	5OS
1801	M8T	1946	O8V1
1815.4	HLMS7	1957.8	5AT
1817.5	KD4	1959.9	QGO7
1820.3	DB9	1988	DAMW
1820.3	DS35		

Goodbye, Gwen

Community protests have caused both the House and Senate Armed Services Committees to halt construction of the second stage of the Ground Wave Emergency Network (GWEN) until the National Academy of Sciences completes a report on the possible health hazards of electrical signals radiated from the system. GWEN is designed to provide communications on longwave that could survive the effects of a high-altitude electromagnetic pulse from a nuclear blast occurring 110 to 300 nautical miles above the U.S.

The GWEN network consists of 54 towers, 150 to 200 miles apart, linking Strategic Air Command headquarters (Offutt Air Force Base, Nebraska), the North American Defense Command (Cheyenne Mountain, Colorado) and airborne aircraft. The system is expected to cost some \$400 million when completed.

Newly Authorized or On the Air

Ken Stryker reports that the following beacons are newly authorized, on the air, or have experienced call or frequency changes.

270	TPF	Tampa (Peter Knight), FL
318	HFY	Indianapolis (Greenwood Municipal), IN
331	JVY	Sellersburg (Clark Co.), IN
338	UMP	Indianapolis (Metropolitan), IN
368	AN	San Antonio (Int'l-Alamo), TX
397	BWK	Bunkie (Municipal), LA
423	DXE	Dexter (Municipal), MO
na	COI	Cocoa (Merritt Island), FL
na	HLR	Fort Hood (Killeen-Hood), TX
na	JUG	Seagoville (Jecca), TX
na	UKL	Burlington (Boyd), KS

368-AN used to be on 254, 397-BWK moved from 206, and 423-DXE was on 284 kHz. Those beacons marked na are newly authorized and apparently don't have their frequency assigned.

Credit, kudos and thanks go to Ed Cunningham, Cal Esra, Ken Stryker, Thomas D. Trocchio, Clifford Buttschardt and the Longwave Club of America. See you next month.



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notes from the frequency manager . . .

Greg Jordan
P.O. Box 98
Brasstown, NC 28902

Larry Miller
Pennsylvania

This month, the second of the "new, improved" shortwave guide, we've reversed a trend toward cutting back the frequency database — a process you will see continuing in the months ahead. Although you haven't complained, our goal is to be as all-inclusive as possible.

We do appreciate all your positive comments. There are a lot of you out there who are attentive beyond measure, and constantly support this column.

Could you do more? This is a call for frequency monitors! Positions are available for official *MT* monitors (a responsible, paid position). We especially welcome voices from the West and Midwest, so that the listings can be accurate for your regions.

Don't feel you have the expertise or the time? Then just jot a note while you're monitoring anytime you notice something different from what's printed in our list, and send it to the

above address. Or how about FAXing it to the Brasstown office (704-837-2216); it's on 24 hrs.

Without actual monitoring, our only recourse is to print a station's official schedule, not knowing if anyone can hear them or not, whether it's out of date, or who knows what? ... Shortwave broadcasters are notoriously fickle with their frequencies!

Those of you who listen regularly already know that; Won't you share your knowledge so that others who may not be as experienced won't give up after their first unsuccessful tries at broadcast monitoring? Sure, shortwave broadcast listening has its difficulties and requires some skill. But the object of the *MT* shortwave guide is to make it as painless as possible.

Meantime, we'll keep monitoring shortwave broadcasts and we'll keep listening to you. Our goal is to keep listening so you'll keep listening.

notes from the program manager . . .

Kannon Shanmugam
4412 Turnberry Circle
Lawrence, Kansas 66047

John Carson
Oklahoma

Jim Frimmel
Texas

BBC FOR FEBRUARY: Here are some of the highlights on the BBC this month. In "Funny That Way," Barry Cryer profiles top comedians, past and present. The program can be heard in the BBC's usual comedy slot — Wednesdays at 1530 UTC, repeated the same evening in North America on Thursday UTC at 0030 UTC.

"They Made Our World" continues for the next few months, as John Newell examines the lives of scientists and inventors whose work helped to shape today's world. At ten minutes' length, blink and you'll miss it; these fascinating profiles, however, are certainly educational. Airtime is 0215 UTC on Sundays (Saturday nights in North America), with the repeat on Mondays at 1445 UTC.

MORE BBC--FOR JANUARY???: This is supposed to be the February issue of *Monitoring Times*, but we'll fudge it a bit in our look at the BBC's monthly programs.

"Two Cheers for January," the comedy program, can be heard on January 30th and 31st, preempting "Funny That Way" at the times noted above. "Two Cheers for February" airs on February 27th and 28th, as well, at the same times. Also, "Seeing Stars," the astronomy program, airs February 2nd at 0130 UTC (early on the

evening of the 1st for North American folk), with a repeat on the 3rd at 1115 UTC.

"The Story of Western Music" certainly has a lot of ground to cover. Consequently, this eight-part series (which actually starts on January 25th) covers the history of Western music from 800 to 1600. Later years will follow in further series. The program can be heard on Fridays (Thursday nights in North America) at 0030 UTC.

Finally, this year's series of "International Recitals" kicks off this month (well, actually on January 27th), featuring live broadcasts of classical music concerts from London's BBC Concert Hall. You can hear the program on Sundays at 1515 UTC, with repeats on Tuesday at 2315 UTC. "Concert Hall," usually heard at those times, is on hiatus this month.

WRITE TO US, PLEASE!: Your comments are always appreciated. Is our new format more useful to you? We can't know unless you write. So drop us a line at the address above. It costs only a quarter...

how to use the shortwave guide

The *Monitoring Times* Shortwave Guide is a section of frequencies, programming, propagation forecasts and other listening tips to enhance your enjoyment in listening to shortwave broadcast stations.

The frequencies listed in the guide are for English language transmissions, updated each month. However, which frequencies may be audible from your location can only be determined by experimentation; it will vary according to time of day or night, season, or sun spots! Refer to the propagation charts on page 84 for aid in predicting conditions.

Because of such variations in reception conditions, it is advisable to tune in a station a few minutes early. In general, lower frequencies work best in the morning and evening, higher frequencies during the day.

The frequency listings are followed by a selected list of advance programming for the most popular listening hours. Each month features a variety of stations and programming in addition to the standard BBC. News broadcasts, however, are listed every month in their entirety in "Newsline."

To listen to a particular program or news broadcast, simply consult the frequency listing at the scheduled start time to find the frequencies in use by the station at that hour.

legend

Frequencies:

- o The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- o In the space between the end time and the station name is the broadcast schedule.

S=Sunday M=Monday T=Tuesday W=Wednesday
H=Thursday F=Friday A=Saturday

If there is no entry, the broadcasts are heard daily. "TEN" indicates a tentative schedule and "TES" a test transmission.

- o The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

v Indicates that the frequency it follows varies
USB Single, upper and lower sideband transmissions;
LSB each code refers only to the frequency it follows.
SSB Sideband programs can only be heard on receivers with sideband capability.
[ML] A multi-lingual transmission containing English-language programs.
* English language lessons.

Programs:

- o Some listings may be followed by "See X 0000." The letter stands for a day of the week using the same day codes listed above. The four digits stand for a time in UTC. Listeners should check back to that day and time to find out more about that particular program.

newsline

"Newsline" is your guide to news broadcasts on the air. ■ All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. ■ All broadcasts are daily unless otherwise noted by brackets enclosing the day codes.

0000 UTC	0300
BBC Christian Science Monitor Kol Israel Radio Australia Radio Beijing Radio Canada Int'l Radio Finland [T-A] Radio Havana Cuba [T-S] Radio Kiev Radio Korea Radio Luxembourg Radio Moscow Radio New Zealand Int'l [M-A] Radio Prague Int'l Radio Sofia Radio Thailand Spanish Foreign Radio Voice of America WWCR (USA Radio News) [T-A] 0005 Radio Pyongyang 0010 Radio Beijing* 0030 BRT, Brussels [T-A] Christian Science Monitor (Asia) [M] Christian Science Monitor [T-F] HCJB*	Radio Budapest [T-S] Radio Canada Int'l [S-M] Radio Havana Cuba [T-S] Radio Jamahiriya, Libya Radio Moscow (World Service) Radio Netherlands [T-S] Voice of America (Americas, East Asia) (Special English) [T-S] Voice of America (East Asia) (Special English) [M] 0045 Radio Korea (News Service) 0055 WRNO (ABC News) [H, A] 0100 All India Radio BBC Christian Science Monitor Deutsche Welle Kol Israel Radio Australia Radio Belize Radio Canada Int'l [S-M] Radio Havana Cuba [T-S] Radio Japan Radio Luxembourg Radio Moscow Radio New Zealand Int'l [M-F] Radio Prague Int'l HCJB
0005	Radio Thailand Radio Yugoslavia Radiotelevisione Italiana RAE, Buenos Aires [T-A] Spanish Foreign Radio Voice of America Voice of Indonesia WWCR (USA Radio News) [T-S] 0115 Radio Havana Cuba* [T-S] 0125 HCJB 0130 Christian Science Monitor (Asia) [M] Christian Science Monitor [T-F] Radio Austria Int'l Radio Budapest Radio Havana Cuba [T-S] Radio Moscow (World Service) Voice of Greece [M-A] 0155 Voice of Indonesia WRNO (ABC News) [W, A] 0200 BBC Christian Science Monitor Deutsche Welle Kol Israel
0010	Radio Australia Radio Canada Int'l [T-A] Radio Havana Cuba [T-S] Radio Luxembourg Radio Moscow Radio New Zealand Int'l [M-F] Radio Prague Int'l HCJB*
0030	Radio Luxembourg Radio Moscow Radio New Zealand Int'l [M-F] Radio Prague Int'l HCJB

newsline

Christian Science Monitor [T-F]	0530 Christian Science Monitor	Radio Australia	Radio Japan	Radio Tanzania [A-S]
Radio Havana Cuba [T-S]	(Africa, Europe, NE Asia) [M]	Radio Jordan	Radio Jordan	Radio Tirana, Albania
Radio Moscow (World Service)	Christian Science Monitor [T-F]	Radio Korea	Radio Korea	Radio Yugoslavia
Radio Netherlands [T-S]	Radio Austria Int'l	Radio Moscow (World Service)	Radio Moscow (World Service)	Swiss Radio Int'l
Radio Tirana, Albania	Radio Havana Cuba [T-S]	Voice of Indonesia	Radio RSA	Trans World Radio, Bonaire
UAE Radio, Dubai	Radio Jordan	Radio Pyongyang	Swiss Radio Int'l	[S]
0340	Radio Moscow (World Service)	Voice of Malaysia	Trans World Radio, Bonaire	Voice of America
Voice of Greece [M-A]	Radio Romania Int'l	0610	[M-F]	WWCR (USA Radio News) [S-F]
0350	Radio Thailand	HCJB	Voice of America	1305
Radio Yerevan	UAE Radio, Dubai	0630	Radio Pakistan (Special	Radio Pyongyang
Radiotelevisione Italiana	Voice of Nigeria	Christian Science Monitor [M-F]	English)	1310
0355	0545 Voice of Nigeria*	Voice of Nigeria	Radio Pyongyang	Radio Beijing*
Radio Japan [M-F]	HCJB	0640	1109	1325
0400	0600	Radio Beijing*	BBC*	HCJB [M-F]
BBC	BBC	Voice of Greece	1110	1328
Christian Science Monitor	Christian Science Monitor	0655	Radio Beijing*	Radio Cairo
Deutsche Welle	Deutsche Welle	Voice of Indonesia	Radio Belize [T-A]	1330
Radio Australia	Radio Australia	0900	Radio Botswana [M-F]	All India Radio
Radio Beijing	Radio Havana Cuba [T-S]	BBC	1115	Christian Science Monitor [M-F]
Radio Canada Int'l	Radio Moscow	Christian Science Monitor	Radio Korea (News Service)	Radio Austria Int'l
Radio Havana Cuba [T-S]	Radio New Zealand Int'l [M-F]	Deutsche Welle	1125	Radio Korea (News Service)
Radio Moscow	Radio Prague Int'l	Radio Australia	Radio Botswana [A-S]	Radio Moscow (World Service)
Radio New Zealand Int'l [M-F]	Radio Romania Int'l	Radio Finland [T-A]	1130	Radio Tashkent
Radio Prague Int'l	Radio RSA	Radio Japan	Christian Science Monitor [M-F]	Swiss Radio Int'l
Radio Romania Int'l	Radio Sofia	Radio Moscow (World Service)	Deutsche Welle* [M-F]	UAE Radio, Dubai
Radio RSA	Radio Tanzania	0915	Radio Austria Int'l [M-F]	Voice of America (Special
Radio Sofia	Radio Thailand	Radio Korea (News Service)	Radio Korea [M-S]	English)
Radio Tanzania	Swiss Radio Int'l	0930	Radio Lesotho	Voice of Turkey
Radio Thailand	Voice of America	Christian Science Monitor [M-F]	Radio Moscow (World Service)	1346
Swiss Radio Int'l	Voice of Turkey	Deutsche Welle (Africa)* [M-F]	Radio Netherlands [M-A]	All India Radio (UN News) [A]
WRNO (ABC News) [F]	WRNO (ABC News) [F]	Radio Beijing	1135	1355
WWCR (USA Radio News) [M-A]	WWCR (USA Radio News) [M-A]	Radio Finland [T-F]	Radio Thailand	WYFR (Network) [M-F]
0405	0410 Radio New Zealand Int'l* [M-F]	1150	1155	1400
Radio New Zealand Int'l* [M-F]	Radio Pyongyang	Radio Japan [M-F]	Radio Japan [M-F]	BBC
Radio Pyongyang	0410	1200	1200	BRT, Brussels [M-F]
0425	Radio Beijing*	BBC	BBC	Christian Science Monitor
Radiotelevisione Italiana	0425	Christian Science Monitor	Radio Australia	Radio Australia
0430	Radio Polonia	Deutsche Welle	Radio Belize [M-F]	Radio Beijing
BBC (Africa)*	Radio Tirana, Albania	Radio Moscow (World Service)	Radio Canada Int'l [S]	Radio Finland [T-A]
Christian Science Monitor	Swiss Radio Int'l	0940	Radio France Int'l	Radio France Int'l
(Africa, Europe, NE Asia) [M]	0640	Radio Beijing*	Radio Japan	Radio Japan
Christian Science Monitor [T-F]	Radio Prague Int'l	0955	Radio Jordan	Radio Jordan
Radio Botswana	0645	RCI	Radio Moscow (World Service)	Radio Korea
Radio Canada Int'l [T-A]	Radio Romania Int'l	Radio Japan (M-F)	Radio Polonia	Radio Moscow (World Service)
Radio Havana Cuba [T-S]	0700	1000	Radio Romania Int'l	Radio Peace and Progress
Radio Moscow (World Service)	BBC	All India Radio	Radio Tashkent	Voice of America
Radio Tirana, Albania	Christian Science Monitor	BBC	Radio Thailand	WWCR (USA Radio News) [M-F]
0455	Radio Australia	BRT, Brussels [M-F]	Voice of America	1210
WYFR (Network) [T-A]	Radio Havana Cuba [T-S]	Christian Science Monitor	Radio Beijing*	Radio Pyongyang
0500	Radio Havana Cuba [T-S]	Deutsche Welle	1215	1410
BBC	Radio Havana Cuba*	Christian Science Monitor [M-F]	Radio Korea	Radio Beijing*
Christian Science Monitor	0715	Radio Australia	1230	1425
Deutsche Welle	Radio Havana Cuba*	Radio Jordan	Christian Science Monitor [M-F]	HCJB [M-F]
HCJB*	0730	Radio Moscow (World Service)	Radio Cairo	1430
Kol Israel	BBC (Africa)*	Radio Tanzania	Radio France Int'l	Christian Science Monitor [M-F]
Radio Australia	BRT, Brussels [M-F]	Swiss Radio Int'l	Radio Moscow (World Service)	Radio Austria Int'l [M-F]
Radio Beijing	Christian Science Monitor [M-F]	Voice of America	Trans World Radio, Bonaire	Radio Moscow (World Service)
Radio Havana Cuba [T-S]	HCJB*	1030	UAE Radio, Dubai	Radio Netherlands [M-A]
Radio Japan	Radio Austria Int'l	Christian Science Monitor [M-F]	Voice of Greece	1455
Radio Lesotho	Radio Finland [T-A]	Radio Australia	1300	All India Radio
Radio Moscow	Radio Havana Cuba [T-S]	Radio Moscow (World Service)	BBC	1500
Radio New Zealand Int'l [M-A]	Radio Moscow	Radio Netherlands [M-A]	Christian Science Monitor	BBC
Radio Thailand	Radio New Zealand Int'l [M-F]	Radio Prag	Deutsche Welle	Christian Science Monitor
Spanish Foreign Radio	Radio Polonia	Int'l	Radio Australia	Radio Australia
Voice of America	Radio Prague Int'l	Radio Sofia	Radio Beijing	Radio Beijing
WWCR (USA Radio News) [T-A]	Radio Sofia	Swiss Radio Int'l	Radio Belize	Radio Belize
0510	Swiss Radio Int'l	0755	Radio Canada Int'l (Asia)	Radio Canada Int'l (North
Radio Beijing*	Radio Japan [M-F]	Radio Japan [M-F]	Radio America) [M-F]	America) [M-F]
Radio Botswana	0800	HCJB	Radio Finland [T-F]	Radio Finland [T-A]
0515	BBC	BBC	Radio Moscow (World Service)	Radio Japan
Radio Havana Cuba* [T-S]	Christian Science Monitor	Christian Science Monitor	Radio Romania Int'l	Radio Moscow (World Service)

newsline

Radio Romania Int'l
 Radio RSA
 Voice of America
 WWCR (USA Radio News)
1505
 Radio Pyongyang
1510
 Radio Beijing*
1515
 Radio Canada Int'l (Europe)
1525
 Radio Finland
1530
 Christian Science Monitor [M-F]
 Deutsche Welle* [M-F]
 FEBA, Seychelles
 Radio Moscow (World Service)
 Radio Tirana, Albania
 Swiss Radio Int'l
 Voice of Greece [M-A]
1545
 Radio Korea (News Service)

1600
 BBC
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Beijing
 Radio France Int'l
 Radio Jordan
 Radio Korea
 Radio Lesotho
 Radio Moscow (World Service)
 Radio Polonia
 Radio Portugal [M-F]
 Radio RSA
 Radio Tanzania
 Voice of America
 WWCR (USA Radio News) [M-F]
1609
 BBC*
1610
 Radio Beijing*
 Radio Botswana [M-F]
1630
 Christian Science Monitor [M-F]
 Radio Austria Int'l
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
 Radio Polonia
 UAE Radio, Dubai
 Voice of America (except Africa) (Special English)
1655
 WYFR (Network) [A]

1700
 BBC
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Belize [M-F]
 Radio Japan
 Radio Jordan [S-H]
 Radio Moscow (World Service)
 Radio New Zealand Int'l [M-F]
 Radio RSA
 Voice of America
1705
 Radio New Zealand Int'l* [M-F]
 Radio Pyongyang
1709
 BBC (Africa)* [A-S]
1710
 Radio Beijing*

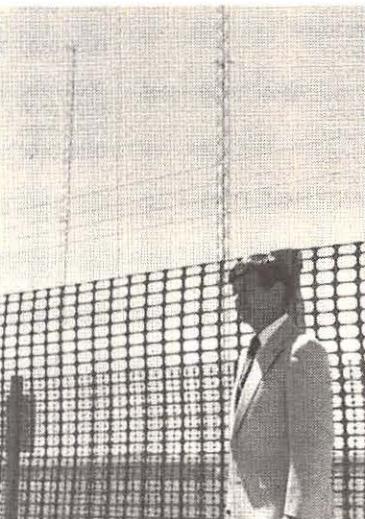
1715
 Radio Canada Int'l
 Radio Korea (News Service)
1730
 Christian Science Monitor [M-F]
 Radio Moscow (World Service)
 Radio Peace and Progress
 Radio Romania Int'l
1735
 WYFR (Network) [M-F]
1740
 BBC (Africa)*
1800

All India Radio
 BBC
 Christian Science Monitor
 Kol Israel
 KVOH (UPI News)
 Radio Australia
 Radio Belize [M-F]
 Radio Bras, Brasilia [M-A]
 Radio Canada Int'l
 Radio Korea
 Radio Moscow (World Service)
 Radio New Zealand Int'l [S-F]
 Radio Prague Int'l
 Radio RSA
 Radio Tanzania
 RAE, Buenos Aires [M-F]
 Voice of America
 WWCR (USA Radio News) [A]
1825
 WYFR (Network) [A]
1830
 Brussels [M-F]
 Christian Science Monitor [M-F]
 Radio Belize
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
 Radio Polonia
 Radio Tirana, Albania
 Swiss Radio Int'l
 Voice of America (Special English)
1840

SLBC, Sri Lanka
 Voice of Greece [M-A]
1855
 BBC (Africa)* [M-F]

1900
 All India Radio
 BBC
 Christian Science Monitor [M-A]
 Deutsche Welle
 HCJB*
 KVOH (UPI News)
 Radio Australia
 Radio Beijing
 Radio Canada Int'l [M-F]
 Radio Havana Cuba [M-A]
 Radio Japan
 Radio Jordan [S-H]
 Radio Moscow (World Service)
 Radio New Zealand Int'l [S-F]
 Radio Tanzania
 Spanish Foreign Radio
 Voice of America
 WWCR (USA Radio News) [M-F]
1903
 Radio Jamahiriya, Libya
1910
 Radio Beijing*
 Radio Botswana

1920
 Voice of Greece [M-A]
1930
 Christian Science Monitor [M-F]
 Deutsche Welle* [M-F]
 Radio Austria Int'l
 Radio Budapest
 Radio Canada Int'l [M-F]
 Radio Finland [M-F]
 Radio Havana Cuba [M-A]
 Radio Moscow (World Service)
 Radio Prague Int'l
 Radio Romania Int'l
 Radio Sofia
 Radio Yugoslavia
1935
 Radiotelevisione Italiana
1945
 Radio Korea (News Service)
1947



Ralph Carson, owner of now-defunct station KUSW, poses with the station's impressive antennae. The new station, religious broadcaster KTBN (see p.28 for the story), has cancelled regular news broadcasts.

Christian Science Monitor [M-F]
 Radio Havana Cuba [M-A]
 Radio Korea
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
2045
 Radio Korea (News Service)
2055
 Voice of Indonesia
2100
 All India Radio
 BBC
 Christian Science Monitor [M-A]
 Deutsche Welle
 KVOH (UPI News)
 Radio Australia
 Radio Beijing

Radio Australia
 Radio Beijing
 Radio Canada Int'l (Asia)
 Radio Canada Int'l (Europe)
 Radio Finland [M-F]
 Radio Havana Cuba [M-A]
 Radio Moscow (World Service)
 Radio New Zealand Int'l [S-F]
 Radio Peace and Progress
 Radio Prague Int'l
 Radio Yugoslavia
 Radiotelevisione Italiana
 Voice of America
 Voice of Free China
2208
 Voice of America (Caribbean)* [M-F]
2210
 Radio Beijing*
2225
 Radio Havana Cuba* [M-A]
2230

Christian Science Monitor [M-F]
 Kol Israel
 Radio Havana Cuba [M-A]
 Radio Moscow (World Service)
 Radio Polonia
 Radio Sofia
 Radio Tirana, Albania
 Radio Vilnius
 Swiss Radio Int'l
 Voice of America (Special English)
 WYFR (Network) [M-F]
2255
 WYFR (Network) [M-A]

2300
 BBC
 Christian Science Monitor [M-A]

Radio Australia
 Radio Belize [M-F]
 Radio Canada Int'l
 Radio Japan
 Radio Moscow
 Radio New Zealand Int'l [S-F]

Radio Vilnius
 Voice of America
 Voice of Turkey
2305
 Radio Polonia
 Radio Pyongyang

2315
 All India Radio
 Radio for Peace Int'l (UN Radio) [M-F]
2320
 Radio Thailand

2330
 Christian Science Monitor [M-F]
 Radio Moscow (World Service)
 Radio New Zealand Int'l [S-H]

Radio Tirana, Albania

2333
 Radio Jamahiriya, Libya
2335
 Voice of Greece [M-A]

2355
 Radio Japan [M-F]

Radio Jamahiriya, Libya
1955
 HCJB
 Radio Finland
 WYFR (Network) [M-A]

2000
 BBC
 Christian Science Monitor
 Kol Israel
 KVOH (UPI News)
 Radio Australia
 Radio Beijing
 Radio Belize [M-F]
 Radio Havana Cuba [M-A]
 Radio Jordan [S-H]
 Radio Moscow (World Service)
 Radio New Zealand Int'l [S-F]
 Radio Polonia
 Radio Portugal [M-F]
 Swiss Radio Int'l
 Voice of America
 Voice of Indonesia
2005
 Radio New Zealand Int'l* [S-H]
 Radio Pyongyang
2010
 Radio Beijing*
2025
 Radio Havana Cuba* [M-A]
 Radiotelevisione Italiana
2030

Radio Belize [M-F]
 Radio Japan
 Radio Jordan [S-H]
 Radio Kiev
 Radio Moscow (World Service)
 Radio New Zealand Int'l [S-F]
 Radio Portugal [M-F]
 Radio Prague Int'l
 Radio Romania Int'l
 Spanish Foreign Radio
 Swiss Radio Int'l
 Voice of America
 Voice of Turkey
2110
 Radio Beijing*
2125
 WYFR (Network) [M-F]

2130
 Christian Science Monitor [M-F]
 Radio Budapest
 Radio Cairo
 Radio Canada Int'l
 Radio Moscow (World Service)
 Radio Sofia

2200
 All India Radio
 BBC
 BRT, Brussels [M-F]
 Christian Science Monitor

0000 UTC

[7:00 PM EST/4:00 PM PST]

FREQUENCIES

0000-0025	Radio Finland, Helsinki	9645	11755
0000-0030	Kol Israel, Jerusalem	7465	9435 11605
0000-0030	Radio Prague Int'l, Czechoslovakia	7345	11680 11990
0000-0030	Radio Australia, Melbourne	11880	13605 15240 15465
		17630	17750 17795 17855
0000-0030	Radio Canada Int'l, Montreal	5960	9755
0000-0100	All India Radio, New Delhi	9535	9910 11715 11745
		15110	
0000-0100	Radio Havana, Cuba	11820	
0000-0100	Radio Pyongyang, North Korea	15115	
0000-0100	Radio Korea, Seoul	15575	
0000-0100	BBC World Service, London, England	5975	6005 6175 7325
		9410	9590 9915 11750
		12095	15260 17830
0000-0100	Adventist World Radio, Costa Rica	9725	11870
0000-0100	CBC Northern Quebec Service, Can	9625(ML)	
0000-0100	CBN, St. John's, Nfld, Canada	6160	
0000-0100	CBU, Vancouver, British Columbia	6160	
0000-0100	CFCF, Montreal, Quebec, Canada	6005	
0000-0100	CFCN, Calgary, Alberta, Canada	6030	
0000-0100	CFRB, Toronto, Ontario, Canada	6070	
0000-0100	CHNS, Halifax, Nova Scotia, Canada	6130	
0000-0100	Christian Science World Svc, Boston	7395	9850 13760 15225
0000-0100	CKWX, Vancouver, British Columbia	6080	
0000-0100	FEBC Radio Int'l, Philippines	15490	
0000-0100	KSDA, Guam	15125	
0000-0100	T-A KUSW, Salt Lake City, Utah	15590	
0000-0100	Radio Beijing, Beijing, China	9770	11655 11715

0000-0100	Radio Kiev, Ukraine	7400	9750 15180 17690
		17720	
0000-0100	Radio Luxembourg, Junglinster	6090	
0000-0100	Radio Moscow N.American Service	6000	6045 7115 7150
		9685	9765 17700
0000-0100	Radio Moscow World Service	7370	17655 17890 21690
0000-0100	Radio New Zealand, Wellington	17675	
0000-0100	Radio for Peace Int'l, Costa Rica	7375	13630 21566
0000-0100	Radio Sofia, Bulgaria	11680	11720
0000-0100	Spanish Foreign Radio, Madrid	9630	11880
0000-0100	Voice of America-Americas Service	5995	9775 9815 11580
0000-0100	Voice of America-Caribbean Service	6130	9455 11695 15205
0000-0100	Voice of America-East Asia Service	7120	9770 11760 15185
		15290	17735 17820
0000-0100	WHRI, Noblesville, Indiana	7315	9495
0000-0100	WINB, Red Lion, Pennsylvania	15145	ML
0000-0100	WRNO Worldwide, Louisiana	7355	
0000-0100	VOA Middle East service	11905	15225 15405 17810
0000-0100	WWCR, Nashville, Tennessee	15690	
0000-0100	WYFR, Okeechobee, Florida	5985	15440
0030-0100	Radio Australia, Melbourne	13605	15240 15465 17630
0030-0100	T-S Radio Budapest, Hungary	17750	17795 17855 21740
0030-0100	T-S Radio Canada Int'l, Montreal	6110	9520 9585 9835
0030-0100	Radio Netherlands Int'l, Hilversum	11910	15160
0035-0100	HCJB, Quito, Ecuador	5960	9755
0050-0100	Vatican Radio, Vatican City	6020	6165 11740
		15155	17875 25950ssb
		9605	11780 15180

SELECTED PROGRAMS

Sundays

0008 Radio Canada Int'l: Innovation Canada. Bob Cadman looks at Canada's new ideas and technological developments.
 0030 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
 0038 Radio Canada Int'l: The Shortwave Listeners' Digest. Ian McFarland with news and features on shortwave radio.

Mondays

0004 Radio Canada Int'l: Royal Canadian Air Farce. A humorous look at the land up north.
 0030 BBC: In Praise of God. A half-hour program of worship.
 0034 Radio Canada Int'l: Double Exposure. See S 0404.

Tuesdays

0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
 0030 Radio Canada Int'l: As It Happens. A detailed look at the people and events making news in Canada and abroad.

Wednesdays

0030 BBC: Omnibus. See T 1615.
 0030 Radio Canada Int'l: As It Happens. See T 0030.

Thursdays

0030 BBC: Funny That Way (except February 28th: Two Cheers for February). See W 1530.
 0030 Radio Canada Int'l: As It Happens. See T 0030.



Voice of Free China staff take a field trip to their transmitter at Tien-Ma.

Fridays

0030 BBC: The Story of Western Music. The history of Western music from 800 to 1600.
 0030 Radio Canada Int'l: As It Happens. See T 0030.

Saturdays

0030 BBC: From the Weeklies. A review of the weekly British press.
 0030 Radio Canada Int'l: As It Happens. See T 0030.
 0045 BBC: Recording of the Week. See M 0545.

0100 UTC

[8:00 PM EST/5:00 PM PST]

FREQUENCIES

0100-0105	Vatican Radio, Vatican City	9605 11780 15180
0100-0115	All India Radio, New Delhi	9535 9910
0100-0125	Radio Netherlands Int'l, Hilversum	6020 6165 11740 15560
0100-0125	RAI, Rome, Italy	9575 11800
0100-0130	Kol Israel, Jerusalem	7465 9435 11605
0100-0130	CBC Northern Quebec Service, Can	9625 (ML)
0100-0130	Radio Australia, Melbourne	11880 15240 15530 17630 17750 17795 17855 21525 21775
0100-0130	Radio Canada International, Montreal	5960 9755
0100-0130	Radio Japan Americas Svc, Tokyo	17755
0100-0130	S,M Radio Norway, Oslo	9615 11925
0100-0130	Radio Prague Int'l, Czechoslovakia	5930 7345 11680
0100-0130	Radio Sweden, Stockholm	15405
0100-0145	Radio Yugoslavia, Belgrade	9620 11735
0100-0150	Deutsche Welle, Köln, West Germany	6040 6085 6145 6155 9565 11865 11890 13610 13770 15440
0100-0200	BBC World Service, London, England	5975 6175 7325 9410 9590 9915 11750 12095 15070 15260
0100-0200	CBN, St John's, Newfoundland	6160
0100-0200	CBU, Vancouver, British Columbia	6160
0100-0200	CFCF, Montreal, Quebec, Canada	6005
0100-0200	CFCN, Calgary, Alberta, Canada	6030
0100-0200	CFRB, Toronto, Ontario, Canada	6070
0100-0200	CHNS, Halifax, Nova Scotia, Canada	6130
0100-0200	Christian Science World Svc, Boston	7395 9850 13760 15225 15610 17555 (+17865 A,S)
0100-0200	CKWX, Vancouver, British Columbia	6080
0100-0200	FEBC Radio Int'l, Philippines	15490
0100-0200	HCJB, Quito, Ecuador	6205 15155 17875
0100-0200	T-A KUSW, Salt Lake City, Utah	15590

0100-0200	WWCR Nashville	7520
0100-0200	Radio Havana Cuba	11820
0100-0200	Radio Japan General Svc, Tokyo	5960 17765 17810 17835 17845
0100-0200	Radio Luxembourg, Junglinster	6090
0100-0200	Radio Moscow North American Svc	6000 6045 7115 7150 7310 9765 9685
0100-0200	Radio for Peace Int'l, Costa Rica	7375 21566
0100-0200	Radio Thailand, Bangkok	4830 9655 11905
0100-0200	Spanish Foreign Radio, Madrid	9630 11880
0100-0200	Voice of America-Americas Service	5995 6130 9455 9775 9815 11580 15205
0100-0200	Voice of America-Middle East' Svs	6095 7205 11905 15225 15250 15405 17740 17810 21550
0100-0200	Voice of America-S. Asia Service	7115 7205 11705 15160 15250 17740 21550
0100-0200	Radio Moscow World Svc	11750
0100-0200	Radio Canada Int'l	9535 11845 11940 13720
0100-0200	Voice of Indonesia, Jakarta	11753 11785
0100-0200	WHRI, Noblesville, Indiana	7315 9495
0100-0200	WINB Red Lion, PA	15145 ML
0100-0200	WRNO Worldwide, Louisiana	7355
0100-0200	WWCR, Nashville, Tennessee	7520
0100-0200	WYFR, Okeechobee, Florida	6065 9505 9680 15440
0100-0200	Radio Austria International, Vienna	9870 9875 13730
0100-0200	Radio Australia, Melbourne	11880 15160 15240 15465 15560 17630 17750 17795 21525 21740 21775
0130-0200	Radio Baghdad, Iraq	11755 11810 11830 21585
0130-0200	Radio Budapest, Hungary	6110 9520 9585 9835
0130-0200	S,M Radio Canada Int'l, Montreal	11910 15160
0130-0200	M-A Voice of Greece, Athens	5960 9755
0145-0200	Vatican Radio, Vatican City	9420 9395 11645 9715 11750 17870

SELECTED PROGRAMS

Sundays

0101 BBC: Play of the Week. Hour-long drama selections.
 0108 Radio Canada Int'l: Spotlight on Science. Bob Cadman examines the latest developments in science and technology.
 0109 Deutsche Welle: Commentary. Opinion on current issues.
 0115 Radio Japan: This Week. The major events of the week, and current affairs topics in Japan.
 0117 Deutsche Welle: Feature. "Mailbag," "Phone-in," or "To The Top" (the German pop scene), presented on a rotating basis.
 0130 Radio Canada Int'l: Earth Watch. Andre Courcy looks at environmental issues.
 0134 Deutsche Welle: German by Radio. An advanced German language course for English speakers.
 0138 Radio Canada Int'l (Latin America): Listeners' Corner. Listener comments, questions, and music requests.
 0138 Radio Canada Int'l (USA): Coast to Coast. Ian McFarland looks at opinions of Canadians on issues affecting them.

Mondays

0101 BBC: Feature/Drama. Program details to be announced (except February 4th: With Great Pleasure, a celebrity presents selections from poetry and prose).
 0108 Radio Canada Int'l: L'Attitude. The arts scene in Canada.
 0109 Deutsche Welle: Commentary. See S 0109.
 0115 Radio Japan: Let's Learn Japanese. See S 0315.
 0116 Deutsche Welle: Living in Germany. A weekly look at the social scene in Germany.
 0130 Radio Japan: DX Corner. See S 0330.
 0134 Deutsche Welle: Larry's Random Selection. Larry Wayne takes a look at Germany from the lighter side.
 0134 Radio Canada Int'l (Latin America): Coast to Coast. See S 0318.
 0134 Radio Canada Int'l (USA): Listeners' Corner. See S 0138.
 0145 BBC: Instruments of the Orchestra. A look at each

of the instruments in a typical orchestra (except February 25th: Classical Music, a series on various classical music topics).

0154 Radio Japan: Viewpoint. See S 0354.

Tuesdays

0101 BBC: Outlook. See M 1405.
 0109 Deutsche Welle: European Journal. See M 0209.
 0116 Radio Japan: In Conversation. See M 0316.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Personal View. See S 0445.
 0134 Deutsche Welle: Transatlantic Diary. Cultural, science, and economic developments between the U.S. and Germany.
 0141 Radio Japan: Let's Practice Japanese. See M 0320.
 0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
 0150 Radio Japan: Commentary. See M 0350.
 0155 Radio Japan: Tokyo Pop-In. See M 0555.

Wednesdays

0101 BBC: Outlook. See M 1405.
 0109 Deutsche Welle: European Journal. See M 0209.
 0116 Radio Japan: Out and Around. See M 0516.
 0122 Radio Japan: Radio Japan Journal (Part 1). See T 0322.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Talk. A short talk on any subject under the sun (except February 6th: Alternative View, a foreigner encounters the night-clubs of Manchester).
 0130 Radio Japan: City Beat. See M 0530.
 0134 Deutsche Welle: Transatlantic Diary. See T 0134.
 0137 Radio Japan: Japan Diary. See M 0537.
 0140 Radio Japan: Radio Japan Journal (Part 2). See T 0322.
 0145 BBC: Country Style. David Allan presents British country music.
 0150 Radio Japan: Commentary. See M 0350.
 0155 Radio Japan: Tokyo Pop-In. See M 0555.

Thursdays

0101 BBC: Outlook. See M 1405.

0109 Deutsche Welle: European Journal. See M 0209.
 0116 Radio Japan: Out and Around. See M 0516.
 0122 Radio Japan: Asia Hotline. See W 0322.

0125 BBC: Financial News. See M 2310.
 0130 BBC: Waveguide. See M 0530.
 0130 Radio Japan: City Beat. See M 0530.
 0134 Deutsche Welle: Transatlantic Diary. See T 0134.
 0137 Radio Japan: Japan Diary. See M 0537.
 0140 BBC: Book Choice. See S 0225.
 0140 Radio Japan: Asia Contact. See W 0340.
 0145 BBC: The Farming World. Developments and issues in the world of agriculture.
 0150 Radio Japan: Commentary. See M 0350.
 0155 Radio Japan: Tokyo Pop-In. See M 0555.

Fridays

0101 BBC: Outlook. See M 1405.
 0109 Deutsche Welle: European Journal. See M 0209.
 0116 Radio Japan: Out and About. See M 1124.
 0122 Radio Japan: Business Today. See H 0322.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Folk in Britain or Jazz Now and Then. See H 1345.
 0130 Radio Japan: City Beat. See M 0530.
 0134 Deutsche Welle: Transatlantic Diary. See T 0134.
 0137 Radio Japan: Japan Diary. See M 0537.
 0140 Radio Japan: Economy Update. See H 0340.
 0145 BBC: Global Concerns. Issues of an environmental nature.
 0150 Radio Japan: Commentary. See M 0350.
 0155 Radio Japan: Tokyo Pop-In. See M 0555.

Saturdays

0101 BBC: Outlook. See M 1405.
 0109 Deutsche Welle: European Journal. See M 0209.
 0116 Radio Japan: Music Mix. See F 0316.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Short Story (except February 2nd: Seeing Stars). See S 1115.
 0134 Deutsche Welle: Through German Eyes. See S 1513.
 0145 BBC: Here's Humph! All that Jazz with Humphrey Lyttelton.
 0150 Radio Japan: Commentary. See M 0350.
 0155 Radio Japan: Tokyo Pop-In. See M 0555.

0200 UTC

[9:00 PM EST/6:00 PM PST]

FREQUENCIES

0200-0220	Radio Veritas-Asia, Philippines	15220 15360	0200-0300	HCJB, Quito, Ecuador	9745 15155 17875
0200-0230	British Forces Radio, UK	7125 9640 13745	0200-0300	KSDA, Guam	13720
0200-0300	Radio Sweden	9695 11705	0200-0300	T-A KUSW, Salt Lake City, Utah	15590
0200-0230	FEBC Radio Int'l, Philippines	15490	0200-0300	Radio Australia, Melbourne	11880 15160 15240 15530
0200-0230	Kol Israel, Jerusalem	7465 9435 11605	0200-0300	Radio Baghdad, Iraq	17630 17750 17795 17855
0200-0230	H,A Radio Budapest, Hungary	6110 9520 9585 9835	0200-0300	Radio Cairo, Egypt	21525 21740 21775
		11910 15160	0200-0300	T-A Radio Canada Int'l, Montreal	11755 11810 11830 21585
0200-0230	S.M Radio Norway, Oslo	9615 11735	0200-0300	Radio Havana Cuba	9475 9675
0200-0230	SLBC Domestic Service, Sri Lanka	4940	0200-0300	Voice of Free China	9505 11820
0200-0230	Swiss Radio International, Berne	6135 9650 9885 12035	0200-0300	Radio Cultura, Guatemala	5950 9680 11740
		17730	0200-0300	Radio Luxembourg, Junglinster	3300
0200-0230	T-A Voice of America	5995 9775 9815 11580	0200-0300	Radio Moscow North American Svc	6090
		15205	0200-0300	Radio Moscow World Service	6000 6045 7115 7150
0200-0250	Deutsche Welle, Koln, W. Germany	6035 7285 9615 9690	0200-0300	Radio New Zealand, Wellington	7310 9765 15425 17700
		11945 11965	0200-0300	T-A Radio For Peace Int'l, Costa Rica	13675 15290 15315 15425
0200-0300	BBC World Service, London, England	5975 6005 6110 6175	0200-0300	Radio Romania Int'l, Bucharest	15435 15530 15580 15595
		7325 9410 9515 9590	0200-0300	Radio Thailand, Bangkok	7370 17590 17605 17890
		9915 11750 12095 15260	0200-0300	RAE, Buenos Aires, Argentina	17675
		15390 21715	0200-0300	Voice of America-South Asia Service	7375 21566
0200-0300	VOA S. Asia Svc	7115 7205 11705 15160	0200-0300	WHRI, Noblesville, Indiana	7115 7205 9740 11705
		15250 17740 21550	0200-0300	WINB, Red Lion, Pennsylvania	7315 9495
0200-0300	VOA Middle East Svc	5965 7205 11905 15225	0200-0300	WRNO Worldwide, Louisiana	15145
		17740 17810 17895 21550	0200-0300	WWCR, Nashville, Tennessee	7355
0200-0300	CBC Northern Quebec Service, Can	9625 (ML)	0200-0300	WYFR, Okeechobee, Florida	7520
0200-0300	CBN, St. John's, Newfoundland, Can	6160	0230-0245	Radio Pakistan (Slow speed news)	6065 9505 11720
0200-0300	CBU, Vancouver, British Columbia	6160	0230-0300	Radio Portugal, Lisbon	9545 15115 17640 17690
0200-0300	CFCF, Montreal, Quebec, Canada	6005	0230-0300	Radio Sweden, Stockholm	17725 21730
0200-0300	CFCN, Calgary, Alberta, Canada	6030	0230-0300	Radio Tirana, Albania	9600 9680 9705 11840
0200-0300	CFRB, Toronto, Ontario, Canada	6070			9695 11705
0200-0300	CHNS, Halifax, Nova Scotia, Canada	6130			9500 11825
0200-0300	Christian Science World Svc, Boston	9455 9850 13720 13760			
		(+ 17865 & 17555 A,S)			
0200-0300	CKWX, Vancouver, British Columbia	6080			

SELECTED PROGRAMS

Sundays

0209 BBC: British Press Review. Editorial opinion in the British press.
 0209 Deutsche Welle: Commentary. See S 0109.
 0213 Deutsche Welle: Sports Report. The latest news from the world of sports.
 0215 BBC: They Made Our World. Scientists who shaped the future of mankind.
 0219 Deutsche Welle: Mailbag Asia. Musical requests and answers to listener questions.
 0225 BBC: Book Choice. Short reviews of current or future best-sellers.
 0230 BBC: Feature. Topical programming on various subjects.

Mondays

0209 BBC: British Press Review. See S 0209.
 0209 Deutsche Welle: European Journal. A review of major events in Europe, with interviews and analyses.
 0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
 0230 BBC: Composer of the Month. A month-long series on a particular classical music composer.
 0234 Deutsche Welle: Science and Technology. New scientific and technological developments.

Tuesdays

0209 BBC: British Press Review. See S 0209.
 0209 Deutsche Welle: European Journal. See M 0209.
 0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
 0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
 0230 Radio Canada Int'l: As It Happens. See T 0030.
 0234 Deutsche Welle: Man and Environment. A program on all topics relating to the environment in industrial and developing countries.

Wednesdays

0209 BBC: British Press Review. See S 0209.
 0209 Deutsche Welle: European Journal. See M 0209.
 0215 BBC: Health Matters. See M 1115.
 0230 BBC: Feature. Topical programming on various subjects (except February 6th: Second City First, a look at big cities which aren't their nations' capitals).
 0230 Radio Canada Int'l: As It Happens. See T 0030.
 0234 Deutsche Welle: Insight. See T 1534.

Thursdays

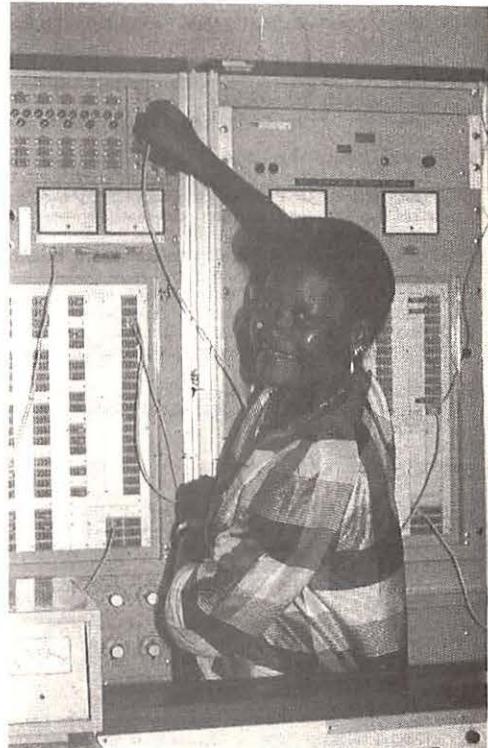
0209 BBC: British Press Review. See S 0209.
 0209 Deutsche Welle: European Journal. See M 0209.
 0215 BBC: Network UK. See T 0215.
 0230 BBC: Assignment. Examinations of current topical issues.
 0230 Radio Canada Int'l: As It Happens. See T 0030.
 0234 Deutsche Welle: Living In Germany. See M 0116.

Fridays

0209 BBC: British Press Review. See S 0209.
 0209 Deutsche Welle: European Journal. See M 0209.
 0215 BBC: Seven Seas. A weekly program about ships and the sea.
 0230 BBC: Drama. See H 1130.
 0230 Radio Canada Int'l: As It Happens. See T 0030.
 0234 Deutsche Welle: Spotlight on Sport. See W 1534.

Saturdays

0209 BBC: British Press Review. See S 0209.
 0209 Deutsche Welle: Commentary. See S 0109.
 0215 BBC: Network UK. See T 0215.
 0223 Deutsche Welle: Panorama. A review of the major news events of the week.
 0230 BBC: People and Politics. Background to the British political scene.
 0230 Radio Canada Int'l: As It Happens. See T 0030.
 0234 Deutsche Welle: Economic Notebook. See F 1534.



Marguerite Bayimbi is Africa Number One's technical manager.

0300 UTC

[10:00 PM EST/7:00 PM PST]

FREQUENCIES

0300-0315	Azad Kashmir Radio, Pakistan	7286 4980 3665	0300-0400	Radio Havana, Cuba	9710 11820
0300-0330	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17630 17750 17795 21525 21740 21775	0300-0400	Radio Cultural, Guatemala	3300
0300-0330	Radio Baghdad, Iraq	11755 11810 11830	0300-0400	Radio Japan, Tokyo	5960 15325 17825
0300-0330	Radio Cairo, Egypt	9475 9675	0300-0400	Radio Moscow North American Svc	6000 6045 7115 7150 7310 9685 9765 15425 17700
0300-0330	Radio Japan, Tokyo	15325 17825 21610	0300-0400	Radio Moscow World Service	17725 17825 17890 21790
0300-0330	Radio Prague Int'l, Czechoslovakia	5930 7345 11680	0300-0400	Radio New Zealand, Wellington	17675
0300-0330	WINB Red Lion, PA	15145 ML	0300-0400	Trans World Radio, Bonaire	9535 11930
0300-0350	Deutsche Welle, Koln, West Germany	6085 6120 9545 9605	0300-0400	Voice of America-Africa Service	6035 7170 7280 9525 9575 11835
0300-0355	Radio Beijing, China	9690 9770 11715	0300-0400	Voice of Free China, Taiwan	5950 7445 9680 9765
0300-0400	VOA Middle East Svc	5965 11905 15160 17810 17895	0300-0400	WHRI, Noblesville, Indiana	7315 9495
0300-0400	BBC World Service, London, England	5975 6005 6175 6195 7135 7325 9410 9600 9915 11750 12095 15220 15260 15420 17705 21715	0310-0325	WRNO Worldwide, Louisiana	7355
0300-0400	CBC, Northern Quebec Service, Can	9625 (ML)	0315-0330	WWCR, Nashville, Tennessee	7520
0300-0400	CBN, St. John's, Newfoundland, Can	6160	0315-0345	WYFR, Okeechobee, Florida	6065 9505 15440
0300-0400	CBU, Vancouver, British Columbia	6160	0315-0345	Vatican Radio, Vatican City	11725
0300-0400	CFCF, Montreal, Quebec, Canada	6005	0330-0400	Radio for Peace Int'l, Costa Rica	7375 USB
0300-0400	CFRB, Toronto, Ontario, Canada	6070	0330-0400	Radio France International, Paris	3965 5990 7135 7280 9745 9790 9800 11705
0300-0400	CFCN, Calgary, Alberta, Canada	6030	0330-0400	Radio Sweden	9695 11705
0300-0400	CHNS, Halifax, Nova Scotia, Canada	6130	0330-0400	Radio Netherlands Int'l, Hilversum	6020 6165 9590 11720
0300-0400	Christian Science World Svc, Boston	9455 9850 13720 13760 15225 (+17865 & 17555 A.S)	0330-0400	Radio Tirana, Albania	9500 11825
0300-0400	CKWX, Vancouver, British Columbia	6080	0330-0400	Radio Tanzania	9684
0300-0400	Faro del Caribe, San Jose, Costa Rica	5055 9645	0330-0400	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17795 21525
0300-0400	HCJB, Quito, Ecuador	9745 15155	0330-0400	United Arab Emirates Radio, Dubai	11945 13675 15400 15435
0300-0400	T-A KUSW, Salt Lake City, Utah	15590/11695	0340-0350	M-A Voice of Greece, Athens	9395 9420 11645
			0349-0357v	Radio Yerevan, Armenia	7400 9750 15180 17690 17720
			0350-0400	RAI, Rome, Italy	11905 15330 17795 17690 17665

SELECTED PROGRAMS

Sundays

0309 Deutsche Welle: Commentary. See S 0109.
 0315 BBC: Society Today. A weekly look at changes in Britain.
 0315 Radio Japan: Let's Learn Japanese. Japanese language lessons for English speakers.
 0317 Deutsche Welle: Feature. See S 0117.
 0330 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
 0330 Radio Japan: DX Corner. Rika Kobayashi presents shortwave radio news, features, and reception reports.
 0334 Deutsche Welle: German by Radio. See S 0134.
 0350 BBC: Write On.... Paddy Feeny presents listener letters.
 0354 Radio Japan: Viewpoint. Japan's international role with regard to major issues at home and abroad.



Heather Couper and Nigel Henbest present "Seeing Stars," a new monthly BBC program on astronomy (See A 0100).

Mondays

0309 Deutsche Welle: Commentary. See S 0109.
 0315 BBC: Good Books. A recommendation of a book to read.
 0315 Radio Japan (North America): Viewpoint. See S 0354.
 0316 Deutsche Welle: Living in Germany. See M 0116.
 0316 Radio Japan: In Conversation. Celebrities talk about themselves, in between musical selections.
 0320 Radio Japan (North America): Let's Practice Japanese. A practice session for the week's language lesson.
 0330 BBC: Anything Goes. See S 1430.
 0334 Deutsche Welle: Larry's Random Selection. See M 0134.
 0341 Radio Japan: Let's Practice Japanese. See M 0320.
 0350 Radio Japan: Commentary. Opinions on current news events worldwide.

Tuesdays

0309 Deutsche Welle: European Journal. See M 0209.
 0315 BBC: The World Today. See M 1645.
 0316 Radio Japan: Out and Around. See M 0516.
 0322 Radio Japan (North America): Radio Japan

0330 Radio Japan: City Beat. See M 0530.
 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
 0337 Radio Japan: Japan Diary. See M 0537.
 0340 Radio Japan: Asia Contact. Japan's relations with the rest of Asia.
 0350 Radio Japan: Commentary. See M 0350.

Thursdays

0309 Deutsche Welle: European Journal. See M 0209.
 0315 BBC: The World Today. See M 1645.
 0316 Radio Japan: Out and Around. See M 0516.
 0322 Radio Japan: Business Today. The latest trends in the Japanese economy.
 0330 BBC: Quiz. See M 1215.
 0330 Radio Japan: City Beat. See M 0530.
 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
 0337 Radio Japan: Japan Diary. See M 0537.
 0340 Radio Japan: Economy Update. Newly marketed products, consumer trends, and interviews.
 0350 Radio Japan: Commentary. See M 0350.
 0355 Radio Japan: Tokyo Pop-In. See M 0555.

Fridays

0309 Deutsche Welle: European Journal. See M 0209.
 0315 BBC: The World Today. See M 1645.
 0316 Radio Japan: Music Mix. A program for young listeners, with Japanese pop music and discussion.
 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
 0350 Radio Japan: Commentary. See M 0350.

Saturdays

0309 Deutsche Welle: European Journal. See M 0209.
 0315 BBC: The World Today. See M 1645.
 0315 Radio Japan: This Week. See S 0115.
 0330 BBC: The Vintage Chart Show. Paul Burnett presents top ten hits from the music charts of yesteryear.
 0334 Deutsche Welle: Through German Eyes. See S 1513.

Wednesdays

0309 Deutsche Welle: European Journal. See M 0209.
 0315 BBC: The World Today. See M 1645.
 0316 Radio Japan: Out and Around. See M 0516.
 0322 Radio Japan: Asia Hotline. A look at the rapid changes in other Asian nations.
 0330 BBC: Discovery. An in-depth look at scientific research.

0400 UTC

[11:00 PM EST/8:00 PM PST]

FREQUENCIES

0400-0410	M-F Radio Zambia, Lusaka	4910
0400-0410	RAI, Rome, Italy	11905 15330 17795
0400-0415	Radio Prague Int'l, Czechoslovakia	5930 7345 11680
0400-0425	Radio Cultural, Guatemala	3300
0400-0425	Radio Netherlands Int'l, Hilversum	9590 11720
0400-0430	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17795 21525 21740 21775
0400-0430	Radio Romania Int'l, Bucharest	5990 6155 9510 9570 11830 11940 15380
0400-0430	Radio Tanzania	9684
0400-0430	Radio Thailand, Bangkok	4830 9655 11905
0400-0430	Swiss Radio International, Berne	6135 9725 9885 12035 13685 17670
0400-0430	Trans World Radio, Bonaire	11930 9535
0400-0450	Deutsche Welle, Köln, West Germany	7225 7150 9765 9565 11765 15265
0400-0450	Radio Pyongyang, North Korea	15180 15230 17765
0400-0455	Radio Beijing, China	11685 11840
0400-0500	Radio Baghdad	11830
0400-0500	VOA Europe	5995 6140 7170 7200 9715
0400-0500	BBC World Service, London, England	5975 6005 6195 7105 7120 9410 9580 9600 9610 9670 9915 12095 15070 15245 17885 21470 21715
0400-0500	CBC, Northern Quebec Service	9625 (ML)
0400-0500	CBN, St. John's, Newfoundland, Can	6160
0400-0500	CBU, Vancouver, British Columbia	6160
0400-0500	CFCF, Montreal, Quebec, Canada	6005
0400-0500	CFCN, Calgary, Alberta, Canada	6030
0400-0500	CFRB, Toronto, Ontario, Canada	6070
0400-0500	CHNS, Halifax, Nova Scotia, Canada	6130

0400-0500	Christian Science World Svc, Boston	9455 9840 13720 13760 15225 17780 (+17555 A.S.)
0400-0500	CKWX, Vancouver, British Columbia	6080
0400-0500	HCJB, Quito, Ecuador	17875 15155
0400-0500	KSDA, Guam	15225
0400-0500	T-A KUSW Salt Lake City, Utah	9815 IRR
0400-0500	Radio Canada Int'l, Montreal	11925
0400-0500	Radio Havana Cuba	9710 9750 11760 11820
0400-0500	Radio Moscow North American Svc	9635 11895 12050 13605 15180 15425 15455 15530 15595(+17605 from 0430)
0400-0500	Radio Moscow World Service	15280 17690 21690 21790
0400-0500	Radio New Zealand, Wellington	17675
0400-0500	Radio Peace Int'l, Costa Rica	7375 USB
0400-0500	Radio RSA, Johannesburg	7270 11900
0400-0500	Radio Sofia, Bulgaria	7115 11720 11735 11760
0400-0500	Voice of America-Africa Service	6025 6035 7280 9525 9575 11785 11835
0400-0500	Voice of America-Middle East Service	3980 5995 6040 6140 7170 7200 11785 15205
0400-0500	Voice of Turkey, Ankara	9445 17880
0400-0500	WHRI, Noblesville, Indiana	7315 9495
0400-0500	S-F WMLK Bethel, Pennsylvania	9465
0400-0500	WRNO Worldwide, Louisiana	6185
0400-0500	WWCR, Nashville, Tennessee	7520
0400-0500	WYFR, Okeechobee, Florida	6065 9505
0425-0440	RAI, Rome, Italy	5990 7275
0430-0500	M-F NBC Windhoek, Namibia	3270 3290
0430-0500	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17630 17750 17795 21525 21740 21775
0430-0500	Radio Tirana, Albania	9500 11835
0430-0500	IRR Radio Truth (clandestine Intended for Zimbabwe)	5015
0455-0500	Voice of Nigeria, Lagos	7255

SELECTED PROGRAMS

Sundays

0404 Radio Canada Int'l: Double Exposure. A mocking look at the week's top news stories and newsmakers.
 0409 Deutsche Welle: Commentary. See S 0109.
 0413 Deutsche Welle: Sports Report. See S 0213.
 0419 Deutsche Welle: International Talking Point. A round-table discussion on major trends and events.
 0430 BBC: That's The Way It Was. Conversations with vanished pop stars (except February 17th, 24th: Pop Music, a series on various musical subjects).
 0434 Deutsche Welle: People and Places. Interviews, stories, and music beamed to Africa.
 0434 Radio Canada Int'l: Listeners' Corner. See S 0138.
 0445 BBC: Personal View. A personal opinion on topical issues in British life.

Mondays

0408 Radio Canada Int'l: Innovation Canada. See S 0008.
 0409 Deutsche Welle: European Journal. See M 0209.
 0430 BBC: Off the Shelf. A reading selected from the best of world literature.
 0434 Deutsche Welle: Africa in the German Press. A look at what German papers and weeklies have to say about Africa.
 0434 Radio Canada Int'l: Spotlight on Science. See S 0108.
 0445 BBC: Talk. A short talk on any subject under the sun.

Tuesdays

0408 Radio Canada Int'l: As It Happens. See T 0030.
 0409 Deutsche Welle: European Journal. See M 0209.
 0430 BBC: Off the Shelf. See M 0430.
 0434 Deutsche Welle: Africa Report. See T 0434.
 0438 Radio Canada Int'l: Current Affairs. See S 1523.

0434 Deutsche Welle: Africa Report. Reports and background to the news from correspondents.

0438 Radio Canada Int'l: Current Affairs. See S 1523.

0445 BBC: Europe's World. See T 0145.

Wednesdays

0408 Radio Canada Int'l: As It Happens. See T 0030.
 0409 Deutsche Welle: European Journal. See M 0209.
 0430 BBC: Off the Shelf. See M 0430.
 0434 Deutsche Welle: Africa Report. See T 0434.
 0438 Radio Canada Int'l: Current Affairs. See S 1523.
 0445 BBC: Country Style. See W 0145.

Thursdays

0408 Radio Canada Int'l: As It Happens. See T 0030.
 0409 Deutsche Welle: European Journal. See M 0209.
 0430 BBC: Off the Shelf. See M 0430.
 0434 Deutsche Welle: Africa Report. See T 0434.
 0438 Radio Canada Int'l: Current Affairs. See S 1523.
 0445 BBC: Andy Kershaw's World of Music. See M 0215.

Fridays

0408 Radio Canada Int'l: As It Happens. See T 0030.
 0409 Deutsche Welle: European Journal. See M 0209.
 0430 BBC: Off the Shelf. See M 0430.
 0434 Deutsche Welle: Africa Report. See T 0434.
 0438 Radio Canada Int'l: Current Affairs. See S 1523.
 0445 BBC: Folk in Britain or Jazz Now and Then. See H 1345.

Saturdays

0408 Radio Canada Int'l: As It Happens. See T 0030.
 0409 Deutsche Welle: Commentary. See S 0109.
 0423 Deutsche Welle: Panorama. See A 0223.
 0430 BBC: Here's Hump! See A 0145.
 0434 Deutsche Welle: Man and Environment. See T 0234.
 0438 Radio Canada Int'l: Current Affairs. See S 1523.
 0445 BBC: Worldbrief. See F 2315.



HCJB (Ecuador)'s "Musical Mailbag" team: Marian Osborne, Carol Cathro, John Adams, Brian Seeley.

0500 UTC

[12:00 PM EST/9:00 PM PST]

FREQUENCIES

0500-0505	Radio Lesotho	4800	0500-0600	Radio Havana Cuba	5965	9710	11760	11820
0500-0515	Azad Kashmir Radio, Pakistan	7268 4980 3665	0500-0600	Radio Japan General Service, Tokyo	15195	17765	17810	17825
0500-0515	Kol Israel, Jerusalem	9435 11605 11655 12077	0500-0600	Radio Moscow North American Svc	9635	11895	12050	13605
		15640 17575	0500-0600	Radio Moscow World Service	15180	15425	15455	15530
0500-0520	Vatican Radio	6185 9645	0500-0600	Radio for Peace Int'l, Costa Rica	15595	17605		
0500-0530	Vatican Radio African Service	17710 17730 21650	0500-0600	Radio Thailand, Bangkok	15280	17690	21690	21790
0500-0530	M-F NBC Windhoek, Namibia	3270 3290	0500-0600	Spanish Foreign Radio, Madrid	7375	USB		
0500-0545	Radio New Zealand, Wellington	17675	0500-0600	Voice of America-Africa Service	4830	9655	11905	
0500-0550	Deutsche Welle, Koln, West Germany	5960 6120 9670 9700	0500-0600	Voice of America-Middle East Service	9630	3990	6035	7280 9540
		11845	0500-0600	Voice of Nigeria, Lagos	3990	9575		
0500-0600	BBC World Service, London, England	5975 6005 6195 7120	0500-0600	WHRI, Noblesville, Indiana	7200	5995	6140	7170
		9410 9600 9640 9915	0500-0600	S-F WMLK Bethel, Pennsylvania	7255	7200	11785	15205
		12095 15070 17740 17885	0500-0600	WRNO New Orleans, Louisiana	7315	9495		
0500-0600	CBU, Vancouver, British Columbia	6160	0500-0600	WWCR, Nashville, Tennessee	9465			
0500-0600	CFCF, Montreal, Quebec, Canada	6005	0500-0600	WYFR, Okeechobee, Florida	6185			
0500-0600	CFCN, Calgary, Alberta, Canada	6030	0500-0600	M-A Radio Botswana	7520			
0500-0600	CFRB, Toronto, Ontario, Canada	6070	0510-0530	Radio Austria International, Vienna	5985	11580	17640	15566
0500-0600	Christian Science World Svc, Boston	9455 9840 13720 13760	0530-0600	Radio Romania Int'l, Bucharest	3356	4830	7255	
		15225 17780 (+17555 A,S)	0530-0600	M-F NBC Windhoek, Namibia	6155	13730		
0500-0600	CHNS, Halifax, Nova Scotia, Canada	6130	0530-0600	UAE Radio Dubai	15340	15380	17720	17745
0500-0600	CKWX, Vancouver, British Columbia	6080	0545-0600	Radio New Zealand, Wellington	3270			
0500-0600	HCJB, Quito, Ecuador	15155 17875	0555-0600	Voice of Malaysia, Kuala Lumpur	15435	17830	21700	
0500-0600	Radio Australia, Melbourne	11880 15160 15240 15320			9855/17675			
		15465 15560 17630 17750			6175	9750	15295	
		17795 21525 21740 21775						

PROGRAMS

Sundays

0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
 0509 Deutsche Welle: Commentary. See S 0109.
 0515 Radio Japan: Hello from Tokyo. Kiyoko Tanaka and David Powers present listener letters and questions.
 0517 Deutsche Welle: Feature. See S 0117.
 0530 BBC: Financial Review. A look back at the financial week.
 0534 Deutsche Welle: German by Radio. See S 0134.
 0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
 0545 BBC: Letter from America. Alastair Cooke's distinctly British view of America.
 0554 Radio Japan: Viewpoint. See S 0354.

Mondays

0509 BBC: Twenty-Four Hours. See S 0509.
 0509 Deutsche Welle: Commentary. See S 0109.
 0516 Deutsche Welle: Living in Germany. See M 0116.
 0516 Radio Japan: Out and Around. Details not available at press time.
 0522 Radio Japan: People. Profiles of leading Japanese in various fields.
 0530 BBC: Waveguide. How to hear the BBC better.
 0530 Radio Japan: City Beat. Details not available at press time.
 0534 Deutsche Welle: Larry's Random Selection. See M 0134.
 0537 Radio Japan: Japan Diary. Foreigners living in Japan give their impressions of the country.
 0540 BBC: Words of Faith. See S 0540.
 0540 Radio Japan: Crosscurrents. A current affairs program featuring views from Japan and abroad.
 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
 0550 Radio Japan: Commentary. See M 0350.
 0555 Radio Japan: Tokyo Pop-In. A short segment featuring a popular song from Japan.

Tuesdays

0509 BBC: Twenty-Four Hours. See S 0509.
 0509 Deutsche Welle: European Journal. See M 0209.

0516 Radio Japan: Out and Around. See M 0516.
 0522 Radio Japan: Asia Hotline. See W 0322.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Japan: City Beat. See M 0530.
 0534 Deutsche Welle: Transatlantic Diary. See T 0134.
 0537 Radio Japan: Japan Diary. See M 0537.
 0540 BBC: Words of Faith. See S 0540.
 0540 Radio Japan: Asia Contact. See W 0340.
 0545 BBC: The World Today. See M 1645.
 0550 Radio Japan: Commentary. See M 0350.
 0555 Radio Japan: Tokyo Pop-In. See M 0555.

Wednesdays

0509 BBC: Twenty-Four Hours. See S 0509.
 0509 Deutsche Welle: European Journal. See M 0209.
 0516 Radio Japan: Out and Around. See M 0516.
 0522 Radio Japan: Asia Hotline. See W 0322.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Japan: City Beat. See M 0530.
 0534 Deutsche Welle: Transatlantic Diary. See T 0134.
 0537 Radio Japan: Japan Diary. See M 0537.
 0540 BBC: Words of Faith. See S 0540.
 0540 Radio Japan: Asia Contact. See W 0340.
 0545 BBC: The World Today. See M 1645.
 0550 Radio Japan: Commentary. See M 0350.
 0555 Radio Japan: Tokyo Pop-In. See M 0555.

Thursdays

0509 BBC: Twenty-Four Hours. See S 0509.
 0509 Deutsche Welle: European Journal. See M 0209.
 0516 Radio Japan: Out and Around. See M 0516.
 0522 Radio Japan: Business Today. See H 0322.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Japan: City Beat. See M 0530.
 0534 Deutsche Welle: Transatlantic Diary. See T 0134.
 0537 Radio Japan: Japan Diary. See M 0537.
 0540 BBC: Words of Faith. See S 0540.
 0540 Radio Japan: Economy Update. See H 0340.
 0545 BBC: The World Today. See M 1645.
 0550 Radio Japan: Commentary. See M 0350.

Fridays

0509 BBC: Twenty-Four Hours. See S 0509.
 0509 Deutsche Welle: European Journal. See M 0209.
 0516 Radio Japan: Out and Around. See M 0516.

John Stone is one of the BBC's most popular newscasters.



0522 Radio Japan: Science Scene. The latest scientific developments and research for new products.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Japan: Japan Music Scene. Music, background, and interviews.
 0537 Radio Japan: Japan Diary. See M 0537.
 0540 BBC: Words of Faith. See S 0540.
 0540 Radio Japan: A Glimpse of Japan. Japanese culture, lifestyles, and traditions.
 0545 BBC: The World Today. See M 1645.
 0550 Radio Japan: Commentary. See M 0350.
 0555 Radio Japan: Tokyo Pop-In. See M 0555.

Saturdays

0509 BBC: Twenty-Four Hours. See S 0509.
 0509 Deutsche Welle: European Journal. See M 0209.
 0515 Radio Japan: This Week. See S 0115.
 0530 BBC: Financial News. See M 2310.
 0534 Deutsche Welle: Through German Eyes. See S 1513.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.

0600 UTC

[1:00 AM EST/10:00 PM PST]

FREQUENCIES

0600-0645	Radio For Peace, Int., Costa Rica	7375	USB
0600-0650	CBU, Vancouver, British Columbia	6160	
0600-0650	Deutsche Welle, Köln, W. Germany	11765	13790 15185 17875
0600-0650	Radio Pyongyang, North Korea	15180	15230
0600-0700	ABC Brisbane, Australia	9660	
0600-0700	ABC Domestic Network, Australia	15425	
0600-0700	BBC World Service, London, England	5975	6180 6195 7120
		7150	9410 9580 9600
		9640	12095 15070 15245
0600-0700	CFCF, Montreal, Quebec, Canada	6005	
0600-0700	CFCN, Calgary, Alberta, Canada	6030	
0600-0700	CFRB, Toronto, Ontario, Canada	6070	
0600-0700	CHNS, Halifax, Nova Scotia, Canada	6130	
0600-0700	Christian Science World Svc, Boston	9455	9840 11705 13720
0600-0700	CKWX, Vancouver, British Columbia	6080	
0600-0700	HCJB, Quito, Ecuador	15155	17875
0600-0700	Radio Australia, Melbourne	11880	13700 13705 15240
		15465	17630 21525 21740
0600-0700	Radio Havana Cuba	5965	11760 11820
0600-0700	Radio Moscow North American Svc.	9635	12050 13605 15180
0600-0700	Radio Moscow World Service	15280	17690 21690 21790
0600-0700	Radio New Zealand, Wellington	9855/17675	
0600-0700	SIBC Solomon Islands	5020	9545

0600-0700	Radio Tonga, Kingdom of Tonga	5030V
0600-0700	M-A Vatican Radio	6248 9645 11740 ML
0600-0700	Voice of America-Africa Service	3990 6035 6080 6125
0600-0700	Voice of America-Middle East Serv	7280 9530 9540 9575
0600-0700	Voice of Hope, Lebanon	3980 5965 5995 6060
0600-0700	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0600-0700	Voice of the Mediterranean, Malta	9765
0600-0700	WHRI, South Bend, Indiana	7315 9495
0600-0700	S-F WMLK Bethel, Pennsylvania	9465
0600-0700	WYFR, Okeechobee, Florida	5985 6065 7355 13760
0618-0700	M-F Radio Canada International, Montreal	6050 6150 7155 9740
		9760 11840 17840
0630-0700	Radio Finland, Helsinki	11755 9560 6120
0630-0700	BRT, Brussels, Belgium	13675 11695
0630-0700	Radio Polonia, Warsaw, Poland	6135 7270 15120 9675
0630-0700	Swiss Radio International, Berne	15430 17570 21770
0630-0700	Radio Tirana, Albania	9500 7205
0630-0700	Vatican Radio African Service	17710 17730 21650
0645-0700	GBC Radio, Accra, Ghana	6130
0645-0700	HCJB, Quito, Ecuador	9610 11835 (alt 6050)
0645-0700 A	Radio for Peace Int., Costa Rica	7375 US
0645-0700	Radio Romania Int'l, Bucharest	11810 11940 15335 17720
		17805 21665

SELECTED PROGRAMS

Sundays

0609 Deutsche Welle: Commentary. See S 0109.
 0613 Deutsche Welle: Sports Report. See S 0213.
 0619 Deutsche Welle: International Talking Point. See S 0419.
 0630 BBC: Jazz for the Asking. A jazz music request show.
 0634 Deutsche Welle: People and Places. See S 0434.

Mondays

0609 Deutsche Welle: European Journal. See M 0209.
 0630 BBC: Feature. See S 1401.
 0630 Radio Canada Int'l: Inside Track. A sports feature magazine.
 0634 Deutsche Welle: Africa in the German Press. See M 0434.

Tuesdays

0609 Deutsche Welle: European Journal. See M 0209.
 0630 BBC: Rock/Pop Music. A series on various musical subjects (except February 5th: The Classic Albums, a look at the Eagles' "Hotel California" and other classic rock LPs).
 0630 Radio Canada Int'l: Coast to Coast. See S 0138.
 0634 Deutsche Welle: Africa Report. See T 0434.

Wednesdays

0609 Deutsche Welle: European Journal. See M 0209.
 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
 0630 Radio Canada Int'l: Open House. The effect of religion on politics, social justice, and personal relations.
 0634 Deutsche Welle: Africa Report. See T 0434.

Thursdays

0609 Deutsche Welle: European Journal. See M 0209.
 0630 BBC: Traveling Tales (except February 21st, 28th: Talk). See M 2315.
 0630 Radio Canada Int'l: Media File. The ethics,



The popular English service announcers and producers from Radio Canada International (l. to r.): David Smith, Bob Cadman, Jim Craig, Gillian MacCormack, and Ian McFarland.

responsibilities, and performance of the media.
 0634 Deutsche Welle: Africa Report. See T 0434.
 0645 BBC: The Farming World. See H 0145.

Fridays

0609 Deutsche Welle: European Journal. See M 0209.
 0630 BBC: Meridian. See W 0630.
 0630 Radio Canada Int'l: Arts Tonight. Interviews, panel discussions and reviews covering the arts.
 0634 Deutsche Welle: Africa Report. See T 0434.

Saturdays

0609 Deutsche Welle: Commentary. See S 0109.
 0623 Deutsche Welle: Panorama. See A 0223.
 0630 BBC: Meridian. See W 0630.
 0634 Deutsche Welle: Man and Environment. See T 0234.

0700 UTC

[2:00 AM EST/11:00 PM PST]

FREQUENCIES

0700-0710	Sierra Leone Brdcstng.Svc.,Freetown	3316
0700-0715	Radio Romania Int'l, Bucharest	11810 11940 15335 17720 17805 21665
0700-0725	BRT Brussels, Belgium	21815 11695 6035
0700-0730	Radio Australia, Melbourne	11880 13705 15240 15465 17630 21525 21740 21775
0700-0730	Radio Tirana, Albania	11835 9500
0700-0750	Radio Pyongyang, North Korea	15340 17795
0700-0800	ABC Brisbane, Australia	9660
0700-0800	BBC World Service, London	5975 7150 9410 9600 9640 9760 11940 12095 15070 15280 15360 15400 21715
0700-0800	CBU, Vancouver, British Columbia	6160
0700-0800	CFCF, Montreal, Quebec, Canada	6005
0700-0800	CFCN, Calgary, Alberta, Canada	6030
0700-0800	CFRB, Toronto, Ontario, Canada	6070
0700-0800	CHNS, Halifax, Nova Scotia, Canada	6130
0700-0800	Christian Science World Svc, Boston	9455 9840 11705 13720 15225 17780
0700-0800	GBC Radio, Accra, Ghana	6130
0700-0800	HCJB, Quito, Ecuador	9610 11835 15270
0700-0800	KNLS, Anchor Point, Alaska	9785
0700-0800	Radio Havana Cuba	11835
0700-0800	Radio Japan, Tokyo	17765 17810 17890 21590 21690
0700-0800	Radio Korea, Seoul	7550 13670

0700-0800	Radio Moscow World Service	15280 17690 21690 21790
0700-0800	Radio New Zealand, Wellington	9855
A	Radio for Peace Int'l, Costa Rica	7375 USB
0700-0800	Solomon Islands Broadcasting Co.	5020 9545
0700-0800	TWR Monte Carlo	9480
0700-0800	Voice of Free China, Taiwan	5950 6130 9745 11925
0700-0800	Voice of Hope, Lebanon	6280
0700-0800	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0700-0800	Voice of the Mediterranean, Malta	9725
0700-0800	Voice of America- THE VOA HAS NO SHORTWAVE BROADCASTS	
THIS HOUR-	MEDIUMWAVE ONLY, 1197kHz VOA EUROPE	
0700-0800	WHRI Noblesville, Indiana	7315 9495
0700-0800	WYFR, Okeechobee, Florida	6065 7355 13760 15566
0700-0800	ZBC-1, Zimbabwe	7283
0710-0800	HCJB, Quito, Ecuador(S. Pacific Sv.)	6130 9745 11925
0730-0800	ABC, Alice Springs, Australia	2310 (ML)
0730-0800	ABC, Katherine, Australia	2485
0730-0800	ABC, Tenant Creek, Australia	2325 (ML)
0730-0800	Radio Austria Int'l, Vienna	21490 15410 13730 6155
0730-0800	Radio Australia, Melbourne	6035 11880 13705 15240
0730-0800	HCJB Quito, Ecuador	17630 21525 21775
0730-0800	KTWR, Agana Guam	9745 11925
0730-0800	Radio Netherlands, Hilversum	15200
0730-0800	Radio Prague Int'l, Czechoslovakia	9630 15560
0730-0800	Radio Sofia, Bulgaria	17840 21705
0730-0800	Swiss Radio Int'l European Service	6035 11880 13705 15240
0730-0800	HCJB Quito, Ecuador	17630 21525 21775
0730-0800	KTWR, Agana Guam	9745 11925
0730-0800	Radio Netherlands, Hilversum	15200
0730-0800	Radio Prague Int'l, Czechoslovakia	9630 15560
0730-0800	Radio Sofia, Bulgaria	17840 21705
0730-0800	Swiss Radio Int'l European Service	6035 11880 13705 15240

0800 UTC

[3:00 AM EST/12:00 AM PST]

FREQUENCIES

0800-0803	Radio Pakistan	17555 21575
0800-0810	Sierra Leone Brdcstng Co., Freetown	3316
0800-0825	Radio Finland, Helsinki	17800 21550
0800-0825	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0800-0825	Radio Netherlands Int'l, Hilversum	9630 15560
0800-0830	Radio Australia, Melbourne	13705 15160 15240 17630 17750 17795 21525 21775
0800-0830	Voice of Islam, Dacca, Bangladesh	15195 11705
0800-0850	Radio Pyongyang, North Korea	15180 15230
0800-0900	ABC Brisbane, Australia	9660
0800-0900	ABC, Alice Springs, Australia	2310 (ML)
0800-0900	ABC, Katherine, Australia	2485
0800-0900	ABC, Perth, Australia	15425
0800-0900	ABC, Tenant Creek, Australia	2325 (ML)
0800-0900	BBC, London	15280 9640 12095 15070 15360 21715 15400 9410 21660
0800-0900	CBN, St. John's, Newfoundland, Can	6160
0800-0900	CBU, Vancouver, British Columbia	6160
0800-0900	CFCF, Montreal, Quebec, Canada	6005
0800-0900	CFCN, Calgary, Alberta, Canada	6030
0800-0900	CFRB, Toronto, Ontario, Canada	6070
0800-0900	CHNS, Halifax, Nova Scotia, Canada	6130
0800-0900	Christian Science World Svc	9455 9530 9840 13720 15225 15610

0800-0900	CKWX, Vancouver, British Columbia	6080
0800-0900	HCJB, Quito, Ecuador	6130 9610 11835
0800-0900	HCJB, Quito, Ecuador (alt pro)	9745 11925 15270
0800-0900	KNLS, Anchor Point, Alaska	11715
0800-0900	KTWR, Guam	15200
0800-0900	Radio Australia (Southwest Pacific)	6020 6035 6080 9710
0800-0900	Radio Havana, Cuba	11835
0800-0900	Radio Moscow World Service	15280 17690 21690 21790
0800-0900	A Radio for Peace Int'l, Costa Rica	7375 USB
0800-0900	Solomon Islands Broadcasting Co.	5020
0800-0900	Trans World Radio, Monte Carlo	9480
0800-0900	Voice of Hope, Lebanon	6280
0800-0900	Voice of Indonesia, Jakarta	11753 11785
0800-0900	Voice of Nigeria, Lagos	7255
0800-0900	WHRI, South Bend, Indiana	7315 7355
0800-0900	Radio Korea, Seoul	9570 13670
0815-0900	S Italian Radio Relay Svc, Milan	9815
0815-0900	A,S Radio New Zealand, Wellington	9855
0830-0855	M-F Radio Netherlands Int'l, Hilversum	15190
0830-0900	Radio Australia, Melbourne	9580 15240 17630 17750 21525 21775
0830-0900	Radio Finland, Helsinki	21550 17800
0830-0900	Radio Netherlands Int'l, Hilversum	9630 17575 21485
0830-0900	Swiss Radio International, Berne	9560 13685 17670 21695
0837-0841v	Radio Tikhly Okean, Vladivostok	4485 5940 7210 7320
0840-0850	Voice of Greece, Athens	15625 17535
0845-0900	KTWR, Agana, Guam	15210

0900 UTC

[4:00 AM EST/1:00 AM PST]

FREQUENCIES

0900-0920	ABC, Perth, Australia	15425
0900-0925	BRT Brussels, Belgium	9925
0900-0925	Radio Netherlands Int'l, Hilversum	9630 17575 21485
0900-0930	KTWR Agana Guam	15200
0900-0930	Radio Australia (Southwest Pacific)	6020 6035 6080 9710
0900-0930	Radio Australia, Melbourne	5995 9580 9760 17715
0900-0945	S Italian Radio Relay Svc, Milan	9815
0900-0950	Deutsche Welle, Koln, West Germany	6160 9565 11740 15410 17780 17820 21600 21650 21680
0900-1000	ABC, Alice Springs, Australia	2310 (ML)
0900-1000	ABC Brisbane, Australia	9660
0900-1000	ABC, Katherine, Australia	2485
0900-1000	ABC, Tennant Creek, Australia	2325 (ML)
0900-1000	S Adventist World Radio, Portugal	9670
0900-1000	BBC World Service, London, England	5975 9740 11750 12095 15070 15190 15360 15400 17640 17705 17790 17885 21470 21660 21715
0900-1000	CFCF, Montreal, Quebec, Canada	6005
0900-1000	CFCN, Calgary, Alberta, Canada	6030
0900-1000	CFRB, Toronto, Ontario, Canada	6070
0900-1000	CHNS, Halifax, Nova Scotia, Canada	6130
0900-1000	Christian Science World Svc, Boston	9455 9530 9840 11980 13720 15610

0900-1000	CKWX, Vancouver, British Columbia	6080
0900-1000	FEBC Radio Int'l, Philippines	11845
0900-1000	HCJB, Quito, Ecuador	6130
0900-1000	HCJB, Quito, Ecuador (alt pro)	9745 11925
0900-1000	KTWR, Agana, Guam	11805
0900-1000	Radio Beijing, China	11755 15440 17710
0900-1000	S Radio Bhutan, Thimpu	5023v
0900-1000	Radio Japan Australian Svc., Tokyo	15270 17890
0900-1000	Radio Japan General Service, Tokyo	11840 21610
0900-1000	Radio Moscow World Service	15280 17690 21690 21790
0900-1000	Radio New Zealand, Wellington	9855
0900-1000	A Radio for Peace Int., Costa Rica	7375 USB
0900-1000	Solomon Islands Broadcasting Co.	5020
0900-1000	Voice of Hope, Lebanon	6280
0900-1000	Voice of Nigeria, Lagos	7255
0900-1000	WHRI, Noblesville, Indiana	7315 7355
0910-0940	M,W,H,A,S Radio Ulan Bator, Mongolia	11850 12015
0920-1000	ABC, Perth, Australia	6140
0930-1000	British Forces Broadcasting Svc, UK	15205 17695 21735
0930-1000	CBN, St. John's, New Foundland	6160
0930-1000	KTWR, Agana, Guam	11805
0930-1000	Radio Afghanistan, Kabul	4940 9635 17655 21600
0930-1000	Radio Australia, Melbourne	5995 9580 9655 9760 17715 21775 21825
0930-0955	RRI Surabaya, Jawa Timur, Indonesia	2377

1000 UTC

[5:00 AM EST/2:00 AM PST]

FREQUENCIES

1000-1015	Radio Budapest, Hungary	15160 15220 11925 9835 9585 6110
1000-1025	BRT Brussels, Belgium	21810 26050
1000-1030	Radio Afghanistan, Kabul	4940 9635 17655 21600
1000-1030	Radio Australia, Melbourne	5995 9580 9655 17715 21775
1000-1030	A Radio for Peace Int., Costa Rica	7375 USB
1000-1030	Swiss Radio International, Berne	9560 13685 17670 21695
1000-1030	Voice of Vietnam, Hanoi	9840 15010
1000-1100	ABC Brisbane, Australia	9660
1000-1100	ABC, Alice Springs, Australia	2310 (ML)
1000-1100	ABC, Katherine, Australia	2485
1000-1100	ABC, Perth, Australia	9610
1000-1100	ABC, Tennant Creek, Australia	2325 (ML)
1000-1100	All India Radio, New Delhi	15010 15335 17387 17865 21735
1000-1100	BBC World Service, London, England	9410 9740 9750 12095 15070 15190 15360 15420 17705 17790 17885 21660
1000-1100	CBN, St. John's, Nfld, Canada	6160
1000-1100	CFCF, Montreal, Quebec, Canada	6005
1000-1100	CFCN, Calgary, Alberta, Canada	6030
1000-1100	CFRB, Toronto, Ontario, Canada	6070
1000-1100	CHNS, Halifax, Nova Scotia, Canada	6130
1000-1100	Christian Science World Svc, Boston	9455 9495 9530 11980 13625 13720 (+11705 A,S)
1000-1100	CKWX, Vancouver, British Columbia	6080

1000-1100	FEBC Radio Int'l, Philippines	11845
1000-1100	HCJB, Quito, Ecuador	9745 11925
1000-1100	KHBN Guam	9830 ML
1000-1100	KSDA, Guam	13720
1000-1100	KTWR, Agana, Guam	11805
1000-1100	Radio Baghdad, Iraq	11860
1000-1100	Radio Beijing, China	11755 15440 17710
1000-1100	Radio Korea, Seoul	15575
1000-1100	Radio Moscow World Service	11840 17690 21690 21790
1000-1100	Solomon Islands Broadcasting Co.	5020
1000-1100	Voice of America-Caribbean Service	9590 11915 15120
1000-1100	Voice of America-Pacific Service	5985 11720 15425
1000-1100	WHRI, South Bend, Indiana	7315 7355
1000-1100	WYFR, Okeechobee, Florida	5950
1015-1030	Radio Korea, Seoul	7275 11740
1015-1100	S Italian Radio Relay Svc, Milan	9815
1030-1100	Adventist World Radio, Forli, Italy	7230
1030-1100	Radio Austria Int'l, Vienna	15450 21490
1030-1100	Radio Australia, Melbourne	5995 9580 9655 21775
1030-1045	Radio Budapest, Hungary	15160 15220 11925 9835 9585 6110
1030-1100	Radio Korea, Seoul	11715
1030-1100	Radio Netherlands Int'l, Hilversum	6020 11890
1030-1100	Radio Tanzania	5985 6105 7165
1030-1100	UAE Radio Dubai	15320 15435 17865 21605
1030-1100	M-A Vatican Radio	6248 9645 11740
1040-1050	Voice of Greece, Athens	15625 17535
1045-1100	Radio Budapest, Hungary	7220 9585 9835 11910
1050-1100	Radio Finland, Helsinki	15400 21550

SO FAR, WE'VE FOUND 7 DOLPHINS IN 60 MILES OF DRIFTNET. THAT ONLY LEAVES 999,940 MILES TO GO.



Japanese, Taiwanese, and South Korean fishermen set a million miles of driftnet a year.

These nets are meant to catch squid, tuna, or salmon. But they are deadly to virtually all living creatures that swim into them.

Recently, Greenpeace activists surveying only 60 miles of driftnet found seven dolphins. Unfortunately, we were too late to save any of them.

But there is still hope for tens of thousands of other dolphins, porpoises, seals, whales, and birds that are expected to get caught up in these invisible plastic "walls of death" this year.

Support Greenpeace Action. We're working directly to stop this strip mining of the oceans.

And we're working to make sure that international efforts to ban driftnets do not get tangled up and die.

GREENPEACE ACTION

1436 U Street, NW, Washington, DC 20009

1100 UTC

[6:00 AM EST/3:00 AM PST]

FREQUENCIES

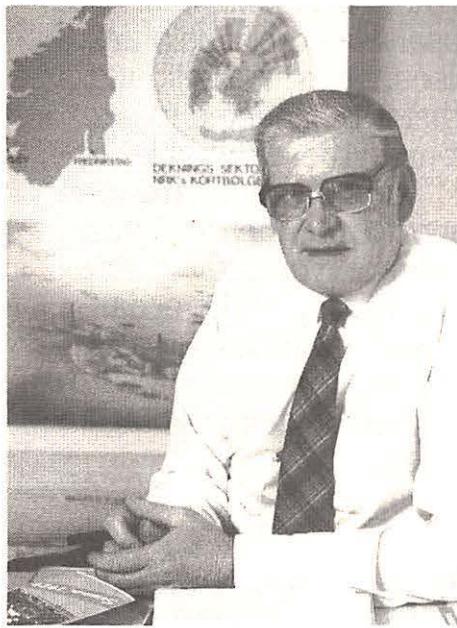
1100-1115	Azad Kashmir Radio, Pakistan	7268	4980	3665
1100-1115	Radio Finland, Helsinki	15400	21550	
1100-1120	Radio Pakistan	17565	21520	
1100-1125	HCJB Quito, Ecuador	9745	11925	
1100-1125	Radio Netherlands Int'l, Hilversum	6020	11890	
1100-1130	Adventist World Radio, Forli, Italy	7230		
1100-1130	Kol Israel, Jerusalem	11585	15650	17575 17590
			21790	
1100-1130	Radio Australia, Melbourne	5995	6020	6035 6080
		9580	9655	9710 11910
		15465	21825	
1100-1130	Radio Mozambique, Maputo	11835	11818	9525
1100-1130	Solomon Islands Broadcasting Co.	5020		
1100-1130	Swiss Radio International, Berne	13635	15570	17830 21770
1100-1130	Voice of Vietnam, Hanoi	9840	15010	
1100-1150	Deutsche Welle, Kolin, West Germany	15410	17765	17800 21600
1100-1150	Radio Pyongyang, North Korea	9977	11735	
1100-1200	ABC, Alice Springs, Australia	2310	(ML)	
1100-1200	Adventist World Radio, Costa Rica	9725	11870	
1100-1200	All India Radio, Northeast Svc	7190		
1100-1200	ABC, Brisbane, Australia	9660		
1100-1200	ABC, Katherine, Australia	2485		
1100-1200	ABC, Perth, Australia	9610		
1100-1200	ABC, Tennant Creek, Australia	2325	(ML)	
1100-1200	BBC World Service, London, England	9410	9515	9740 9750
		11775	12095	15070 15360
1100-1200	CBN, St. John's, Newfoundland, Can	6160		
1100-1200	CFCF, Montreal, Quebec, Canada	6005		
1100-1200	CFCN, Calgary, Alberta, Canada	6030		
1100-1200	CFRB, Toronto, Ontario, Canada	6070		
1100-1200	CHNS, Halifax, Nova Scotia, Canada	6130		

1100-1200	Christian Science World Svc, Boston	9455	9495	9530 11980
1100-1200	CKWX, Vancouver, British Columbia	6080		
1100-1200	KHBN, Guam	9830	ML	
1100-1200	Radio Baghdad, Iraq	11860		
1100-1200	Radio Japan, Tokyo	6120	11815	11840
1100-1200	Radio Jordan, Amman	13655		
1100-1200	Radio Moscow, World Service	11840	17690	21690 21790
1100-1200	Radio RSA, Johannesburg	9555	11805	11900 17835
1100-1200	A,S Radio Tanzania	5985	6105	7165
1100-1200	SBC Singapore	11940		
1100-1200	Trans World Radio, Bonaire	11815	15345	
1100-1200	Voice of America-Caribbean Service	9590	11915	
1100-1200	Voice of America-East Asia Service	5985	6110	9760 11720
		15155	15425	
1100-1200	WHRI, Noblesville, Indiana	9465	11790	
1100-1200	WYFR, Okeechobee, Florida	5950	11580	
1110-1120vM-F	Radio Botswana	4830	5995	7255
1115-1145	Radio Nepal, Katmandu (External Svc.)	5005		
1115-1200	Radio Korea, Seoul	9750		
1130-1140	Radio Lesotho	4800		
1130-1145	Radio Budapest, Hungary	15190	6110	9835 15160
		15220		
1130-1200	HCJB, Quito, Ecuador	11740	15155	17890
1130-1200	Radio Austria International, Vienna	6155	13730	21490
1130-1200	Radio Australia, Melbourne	5995	6020	6035 6080
		9580	9710	11720 11910
1130-1200	Radio Netherlands Int'l, Hilversum	5995	6020	9715 11660
		15465	21825	
1130-1200	Radio Thailand	11905	9655	4830
1130-1200	Voice of Islamic Republic of Iran	9575	9705	11715 11790
		11825		
1150-1200	Radio Finland	15400	21550	

SELECTED PROGRAMS

Sundays

1109 Deutsche Welle: Arts on the Air. Reports and interviews on cultural events and developments.
 1115 BBC: Short Story. Brief tales written by BBC listeners (except February 3rd: Seeing Stars, a monthly look at astronomy).
 1115 Radio Japan: Hello from Tokyo. See S 0515.
 1130 BBC: The Ken Bruce Show. See S 0030.



Erling Thokle has been the program director of Radio Norway International since 1964.

1134 Deutsche Welle: German by Radio. See S 0134.
 1154 Radio Japan: Viewpoint. See S 0354.

Mondays

1109 Deutsche Welle: Newsline Cologne. A current affairs program with worldwide reports and a German press review.
 1115 BBC: Health Matters. New developments in the world of medical science and fitness.
 1120 Radio Japan: Asialwatch. Developments in the Asian region.
 1124 Radio Japan: Round and About. Details not available at press time.
 1130 BBC: Composer of the Month. See M 0230.
 1131 Radio Japan: City Beat. See M 0530.
 1134 Deutsche Welle: Hello Africa. Musical requests and greetings to friends.
 1137 Radio Japan: Japan Diary. See M 0537.
 1140 Radio Japan: Crosscurrents. See M 0540.
 1150 Radio Japan: Commentary. See M 0350.

Tuesdays

1109 Deutsche Welle: Newsline Cologne. See M 1109.
 1115 BBC: Waveguide. See M 0530.
 1120 Radio Japan: Asialwatch. See M 1120.
 1124 Radio Japan: Round and About. See M 1124.
 1125 BBC: Book Choice. See S 0225.
 1130 BBC: Megamix. See T 0030.
 1131 Radio Japan: City Beat. See M 0530.
 1134 Deutsche Welle: Hello Africa. See M 1134.
 1137 Radio Japan: Japan Diary. See M 0537.
 1140 Radio Japan: Radio Japan Journal (Part 2). See T 0322.
 1150 Radio Japan: Commentary. See M 0350.

Wednesdays

1109 Deutsche Welle: Newsline Cologne. See M 1109.
 1115 BBC: Country Style. See W 0145.
 1120 Radio Japan: Asialwatch. See M 1120.
 1124 Radio Japan: Round and About. See M 1124.
 1130 BBC: Meridian. See W 0630.

1131 Radio Japan: City Beat. See M 0530.
 1134 Deutsche Welle: Hello Africa. See M 1134.
 1137 Radio Japan: Japan Diary. See M 0537.
 1140 Radio Japan: Asia Contact. See W 0340.
 1150 Radio Japan: Commentary. See M 0350.

Thursdays

1109 Deutsche Welle: Newsline Cologne. See M 1109.
 1115 BBC: The Farming World. See H 0145.
 1120 Radio Japan: Asialwatch. See M 1120.
 1124 Radio Japan: Round and About. See M 1124.
 1130 BBC: Drama. A half-hour of the world's finest radio theater.
 1131 Radio Japan: City Beat. See M 0530.
 1134 Deutsche Welle: Hello Africa. See M 1134.
 1137 Radio Japan: Japan Diary. See M 0537.
 1140 Radio Japan: Economy Update. See H 0340.
 1150 Radio Japan: Commentary. See M 0350.

Fridays

1109 Deutsche Welle: Newsline Cologne. See M 1109.
 1115 BBC: Global Concerns. See F 0145.
 1120 Radio Japan: Asialwatch. See M 1120.
 1124 Radio Japan: Round and About. See M 1124.
 1130 BBC: Meridian. See W 0630.
 1131 Radio Japan: Japan Music Scene. See F 0530.
 1134 Deutsche Welle: Hello Africa. See M 1134.
 1137 Radio Japan: Japan Diary. See M 0537.
 1140 Radio Japan: A Glimpse of Japan. See F 0540.
 1150 Radio Japan: Commentary. See M 0350.

Saturdays

1109 Deutsche Welle: Africa This Week. A review of trends and events on the African continent.
 1115 BBC: Worldbrief. See F 2315.
 1115 Radio Japan: This Week. See S 0115.
 1130 BBC: Meridian. See W 0630.
 1134 Deutsche Welle: Mailbag Africa. Listeners' questions, music requests, and the club corner.

1200 UTC

[7:00 AM EST/4:00 AM PST]

FREQUENCIES

1200-1215	Radio Korea, Seoul	9650	9750
1200-1225	All India Radio Northeast Svc	7190	ML
1200-1210	Radio Finland, Helsinki	15400	21550
1200-1225	Radio Netherlands Int'l, Hilversum	5955	6020 9715 11660
		17575	21480 21520
1200-1225	Voice of Islamic Republic of Iran	9575	9705 11715 11790
		11825	
1200-1230	Radio Australia, Melbourne	5995	6020 6035 6080
1200-1230 A,S	Radio Norway International, Oslo	21735	25730
1200-1230	Radio Romania Int'l, Bucharest	15380	17720
1200-1230	Radio Tashkent, Uzbekistan	7325	9715 11785 15460
		17740	
1200-1230	Radio Thailand	11905	9655 4830
1200-1230 M,W,H,A,S	Radio Ulan Bator, Mongolia	11850	12025
1200-1230	Vatican Radio, Vatican City	17865	21515
1200-1300	ABC, Alice Springs, Australia	2310	(ML)
1200-1300	ABC, Brisbane, Australia	9660	
1200-1300	ABC, Katherine, Australia	2485	
1200-1300	ABC, Perth, Australia	9610	
1200-1300	ABC, Tennant Creek, Australia	2325	(ML)
1200-1300	Adventist World Radio, Costa Rica	9725	11870
1200-1300	BBC World Service, London, England	5965	6195 9515 9740
		11775	12095 15070 17640
		17705	17790 17885 21470
		21660	21710
1200-1300	CBU, Vancouver, British Columbia	6160	
1200-1300	CFCF, Montreal, Quebec, Canada	6005	
1200-1300	CFCN, Calgary, Alberta, Canada	6030	

1200-1300	CFRB, Toronto, Ontario	6070
1200-1300	CHNS, Halifax, Nova Scotia, Canada	6130
1200-1300	Christian Science World Service	9495 9895 11930 11980
		13625 13720 (+21780 A,S)
1200-1300	CKWX, Vancouver, British Columbia	6080
1200-1300	HCJB, Quito, Ecuador	11740 15115 17890
1200-1300	KHBN Guam	9830 ML
1200-1300	Radio Beijing, China	9530 11600 11660 15450
1200-1300	Radio Bras, Brasilia	11745
1200-1300	Radio Jordan, Amman	13655
1200-1300	Radio Moscow World Service	11840 17690 21690 21790
1200-1300 A,S	Radio Tanzania	5985 6105 7165
1200-1300	SBC Singapore	11940
1200-1300	Trans World Radio, Bonaire	11815 15345
1200-1300	Voice of America-East Asia Service	6110 9760 11715 15155
		15425 9530
1200-1300	WHRI, Noblesville, Indiana	9465 11790
1200-1300	WWCR Nashville, Tennessee	15690
1200-1300	WYFR, Okeechobee, Florida	5950 6015 11580 17750
1215-1225	Radio Bayrak, Northern Cyprus	6150
1225-1300	All India Radio Northeast Svc	3255 ML
1230-1245	Radio Korea, Seoul	9650 9750
1230-1300	Italian Radio Relay Svc, Milan	9815 (ML)
1230-1300	Radio Australia, Melbourne	5995 6020 6035 6080
		9580 11720 11910 15465
1230-1300	Radio Bangladesh, Dacca	15195 17817
1230-1300	Radio France International, Paris	9805 11670 15155 15195
		17650 21635 21645
1230-1300	Radio Sweden, Stockholm	15190 21570 17740
1235-1245	Voice of Greece, Athens	15625 15650 17535

SELECTED PROGRAMS

Sundays

1201 BBC: Play of the Week. See S 0101.

Mondays

1215 BBC: Quiz. Test your wits in a game show of the airwaves.

1245 BBC: Sports Roundup. See S 1345.

Tuesdays

1215 BBC: Multitrack 1: Top 20. See M 2330.

1245 BBC: Sports Roundup. See S 1345.

Wednesdays

1215 BBC: New Ideas. See M 1615.

1235 BBC: Food Plants (except February 27th: Talk). See M 1635.

1245 BBC: Sports Roundup. See S 1345.

Thursdays

1215 BBC: Multitrack 2. See W 2330.

1245 BBC: Sports Roundup. See S 1345.

Fridays

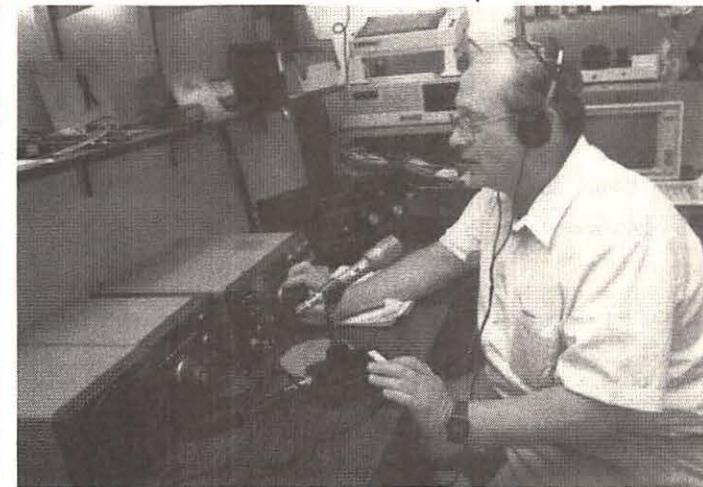
1215 BBC: Feature. Topical programming on various subjects.

1245 BBC: Sports Roundup. See S 1345.

Saturdays

1215 BBC: Multitrack 3. See F 2330.

1245 BBC: Sports Roundup. See S 1345.



Ben Dalfen scans the airwaves, hunting for shortwave news for his program, "DX Corner," airing Sundays on Kol Israel.

Got Something to Say?

MT columnists and editors would love to hear it. Got something you think we should cover? We'd like to know.

Courtesy requires, however, that whenever requesting a reply of a columnist, you enclose a self-addressed, stamped envelope for return postage.

1300 UTC

[8:00 AM EST/5:00 AM PST]

FREQUENCIES

1300-1315	Radio Jordan, Amman	13655
1300-1325	Radio Finland, Helsinki	15400 21550
1300-1330	Radio Australia, Melbourne	5995 6020 6035 6080 9580 11720 11910 15465 21825
1300-1330	Radio Canada Int'l (China relay)	11955 15210
1300-1330 A,S	Radio Norway International, Oslo	9585 9590
1300-1330	Radio Tirana, Albania	11855 9500
1300-1330	Radio Yugoslavia, Belgrade	17740 21555 25795
1300-1330	Swiss Radio Int'l European Service	3985 6165 9535
1300-1330 S	Trans World Radio, Bonaire	15345 11815
1300-1350	Radio Pyongyang, North Korea	9325 9345
1300-1400	ABC, Alice Springs, Australia	2310
1300-1400	ABC, Brisbane, Australia	9660
1300-1400	ABC, Katherine, Australia	2485
1300-1400	ABC, Perth, Australia	9610
1300-1400	ABC, Tennant Creek, Australia	2325 (ML)
1300-1400	Adventist World Radio, Costa Rica	9725 11870
1300-1400	All India Radio Northeast Svc	3255 ML
1300-1400	BBC World Service, London, England	5965 9410 9515 9740 11775 12095 15070 17640 17705 17790 17885 21470 21660 21710
1300-1400	CBC Northern Quebec Service, Can	9625
1300-1400	CBN, St. John's, Newfoundland	6160
1300-1400	CBU, Vancouver, British Columbia	6160
1300-1400	CFCF, Montreal, Quebec, Canada	6005
1300-1400	CFCN, Calgary, Alberta, Canada	6030
1300-1400	CFRB, Toronto, Ontario, Canada	6070
1300-1400	CHNS, Halifax, Nova Scotia, Canada	6130
1300-1400	Christian Science World Service	9495 9650 9895 11930 11980 13625 (+21780 A,S)
1300-1400	CKWX, Vancouver, British Columbia	6080
1300-1400	FEBC Radio Int'l, Philippines	11850
1300-1400	HCJB, Quito, Ecuador	11740 17890 25950 USB

1300-1400	KHBN Guam	9830 ML
1300-1400 S	Italian Radio Relay Svc, Milan	9815
1300-1400	Radio Australia Middle East Svc	17630 21775
1300-1400	Radio Beijing, China	9530 11600 11660 11850
1300-1400 M-F	Radio Canada Int'l, Montreal	9635 11855 17820
1300-1400	Radio Korea, Seoul	9570
1300-1400	Radio Moscow World Service	11840 17690 21690 21790
1300-1400	Radio Romania Int'l, Bucharest	11940 15365 17850 21665
1300-1400 A,S	Radio Tanzania	5985 6105 7165
1300-1400	Voice of America-East Asia Service	6110 9760 11715 15155 15425
1300-1400	WHRI, Noblesville, Indiana	9465 11790
1300-1400	WWCR, Nashville, Tennessee	15690
1300-1400	WYFR, Okeechobee, Florida	5950 6015 11550 11580 13695 17750
1315-1400	Radio Jordan, Amman	9560
1315-1400	Radio Tikhly Okean, Vladivostok	5015
1330-1400	All India Radio, New Delhi	9565 11760 15335
1330-1400	British Forces Broadcasting Svc, UK	15195 17695 21735
1330-1400 M-SBRT	Brussels, Belgium	21820
1330-1400 M-FBRT	Brussels, Belgium	21815
1330-1400	Laotian National Radio	7116V
1330-1400	Radio Austria International, Vienna	15430
1330-1400	Radio Australia, Melbourne	5995 6020 6035 6080 9580
1330-1345 A,S	Radio Finland, Helsinki	21550 15400
1330-1400	Radio Tashkent, Uzbekistan	7325 9715 11785 15460 17740
1330-1400	Swiss Radio International, Berne	9620 11695 15570 17830
1330-1400 A	Trans World Radio, Bonaire	21695 25680
1330-1400	UAE Radio, Dubai	11815 15345
1330-1400	Voice of Turkey, Ankara	15435 17865 21605 17785
1330-1400	Voice of Vietnam, Hanoi	9840 12020 15010
1345-1400	Vatican Radio	7250 9645 11740

SELECTED PROGRAMS

Sundays

1308 Radio Canada Int'l: Listeners' Corner. See S 0138.
1345 BBC: Sports Roundup. The day's sports news.

Mondays

1308 Radio Canada Int'l (Asia): Current Affairs. See S 1523.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Andy Kershaw's World of Music. See M 0215.
1330 Radio Canada Int'l: North Country. Sports, weather, and the stock market report.
1345 BBC: Personal View. See S 0445.

Tuesdays

1308 Radio Canada Int'l (Asia): Current Affairs. See S 1523.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Network UK. See T 0215.
1330 Radio Canada Int'l: North Country. See M 1530.
1345 BBC: That's The Way It Was (except February 19th, 26th: Pop Music). See S 0430.

Wednesdays

1308 Radio Canada Int'l (Asia): Current Affairs. See S 1523.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Development '91. Aid and development issues.
1330 Radio Canada Int'l: North Country. See M 1523.



Four VOA staff members from the Hindi, Arabic, Farsi, and Bengali services interview Rep. Arthur Ravenel of South Carolina.

Thursdays

1308 Radio Canada Int'l (Asia): Current Affairs. See S 1523.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Network UK. See T 0215.
1330 Radio Canada Int'l: North Country. See M 1523.
1345 BBC: Folk in Britain or Jazz Now and Then. A look at folk or jazz music on the British Isles.

Fridays

1308 Radio Canada Int'l (Asia): Current Affairs. See

S 1523.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Quiz. Test your wits in a game show of the airwaves.
1330 Radio Canada Int'l: North Country. See M 1523.

Saturdays

1308 Radio Canada Int'l: Innovation Canada. See S 0008.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Network UK. See T 0215.
1345 BBC: Good Books. See M 0315.

1400 UTC

[9:00 AM EST/6:00 AM PST]

FREQUENCIES

1400-1415	Azad Kashmir Radio, Pakistan	7268	4980	3665
1400-1430	ABC, Alice Springs, Australia	2310	(ML)	
1400-1430	ABC, Tennant Creek, Australia	2325	(ML)	
1400-1430	Radio Australia, Melbourne	5995	6020	6035 6060
		6080	7215	9580
1400-1430	Radio Juba, Sudan	9540	9550	
1400-1430	Radio France International, Paris	11925	21780	
1400-1430	Radio Polonia, Warsaw, Poland	6095	7285	
1400-1430	Radio Sweden, Stockholm	11905	17740	
1400-1430	Radio Tirana, Albania	9500	11895	
1400-1430	Swiss Radio Int'l, Berne	6165	9535	12030
1400-1500	ABC, Brisbane, Australia	9660		
1400-1500	ABC, Katherine, Australia	2485		
1400-1500	ABC, Perth, Australia	9610		
1400-1500	All India Radio, New Delhi	9565	11760	15335
1400-1500	All India Radio Northeast Svc	3255	ML	
1400-1500	BBC World Service, London, England	9410	11750	12095 15070
		17640	17705	17790 17880
1400-1500	CBC Northern Quebec Service, Can	9625		
1400-1500	CBN, St. John's, Newfoundland	6160		
1400-1500	M-ACB, Vancouver, British Columbia	6160		
1400-1500	CFCF, Montreal, Quebec, Canada	6005		
1400-1500	CFCN, Calgary, Alberta, Canada	6030		
1400-1500	CFRB, Toronto, Ontario	6070		
1400-1500	CHNS, Halifax, Nova Scotia, Canada	6130		
1400-1500	Christian Science World Service	9530	11980	13625 13720
1400-1500	CKWX, Vancouver, British Columbia	6080		
1400-1500	FEBC Radio Int'l, Philippines	11850		
1400-1500	HCJB, Quito, Ecuador	11740	17890	25950 USB
1400-1500	KHBN Guam	9830	ML	
1400-1500	Radio Australia Middle East Svc	17630	21775	

1400-1500	Radio Beijing, China	11815	11850	15165
1400-1500 S	Radio Canada Int'l, Montreal	11955	17820	
1400-1500	Radio Japan General Service, Tokyo	11815	11865	
1400-1400	Radio Jordan, Amman	9560		
1400-1500	Radio Moscow World Service	11840	17690	21690 21790
1400-1500	Radio RSA, Johannesburg	9555	11925	17835
1400-1500	Radio Sta. Peace & Progress, Moscow	11870	15180	17635 17805
	(from 1330 add: 15435 15480 15560 17835)			
1400-1500 A,S	Radio Tanzania	5985	6105	7165
1400-1500	Voice of America-East Asia Service	6110	9760	15155 15425
1400-1500	Voice of America-South Asia Service	7125	9645	9760 15205
1400-1500	Voice of the Mediterranean, Malta	11925		
1400-1500	Voice of Nigeria, Lagos	7255		
1400-1500	WHRI, Noblesville, Indiana	9465	15105	
1400-1500	WWCR, Nashville, Tennessee	15690		
1400-1500	WYFR, Okeechobee, Florida	5950	6015	11580 13695
1405-1500	WYFR, Taiwan	11550		
1405-1430	Radio Finland, Helsinki	15185	21550	11820
1415-1500	M-A Radio Bhutan	5023V		
1415-1425	Radio Nepal, Katmandu	5005	7165	(alt. 3230)
1430-1500 F	ABC, Tennant Creek, Australia	2325	(ML)	
1430-1500	Radio Austria International, Vienna	6155	11780	13730 21490
1430-1500	Radio Australia, Melbourne	5995	6020	6036 6060
1430-1500	Radio Netherlands Int'l, Hilversum	5995	13770	15150 17575
1430-1500	Voice of Hope, Lebanon	17605		
1430-1500	Voice of Myanmar (Burma)	6280		
1445-1500	Radio Korea, Seoul	5990V		
1445-1500	M,W,H,A,SRadio Ulan Bator, Mongolia	7275		
		9795	13780	

SELECTED PROGRAMS

Sundays

1401 BBC: Feature. Topical programming on various subjects.
 1404 Radio Canada Int'l: Sunday Morning. A magazine program covering virtually everything under the sun.
 1415 Radio Japan: Hello from Tokyo. See S 0515.
 1430 BBC: Anything Goes. Bob Holness presents a variety of odd recordings.
 1454 Radio Japan: Viewpoint. See S 0354.

Mondays

1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.
 1416 Radio Japan: Out and Around. See M 0516.
 1422 Radio Japan: People. See M 0522.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Japan: City Beat. See M 0530.
 1437 Radio Japan: Japan Diary. See M 0537.
 1440 Radio Japan: Crosscurrents. See M 0540.
 1445 BBC: They Made Our World. See S 0215.
 1450 Radio Japan: Commentary. See M 0350.
 1455 BBC: Book Choice. See S 0225.
 1455 Radio Japan: Tokyo Pop-In. See M 0555.

Tuesdays

1405 BBC: Outlook. See M 1405.
 1416 Radio Japan: Out and Around. See M 0516.
 1422 Radio Japan: Radio Japan Journal (Part 1). See T 0322.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Japan: City Beat. See M 0530.
 1437 Radio Japan: Japan Diary. See M 0537.
 1440 Radio Japan: Radio Japan Journal (Part 2). See T 0322.
 1445 BBC: Instruments of the Orchestra (except February 26th: Classical Music). See M 0145.



Bob Holmes hosts "Anything Goes" on the BBC World Service.

Wednesdays

1405 BBC: Outlook. See M 1405.
 1416 Radio Japan: Out and Around. See M 0516.
 1422 Radio Japan: Asia Hotline. See W 0322.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Japan: City Beat. See M 0530.
 1437 Radio Japan: Japan Diary. See M 0537.
 1440 Radio Japan: Asia Contact. See W 0340.
 1445 BBC: Business Matters. A weekly survey of commercial and financial news.
 1450 Radio Japan: Commentary. See M 0350.

1455 Radio Japan: Tokyo Pop-In. See M 0555.

Thursdays

1405 BBC: Outlook. See M 1405.
 1416 Radio Japan: Out and Around. See M 0516.
 1422 Radio Japan: Business Today. See H 0322.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Japan: City Beat. See M 0530.
 1437 Radio Japan: Japan Diary. See M 0537.
 1440 Radio Japan: Economy Update. See H 0340.
 1445 BBC: Recording of the Week. See M 0545.
 1450 Radio Japan: Commentary. See M 0350.
 1455 Radio Japan: Tokyo Pop-In. See M 0555.

Fridays

1405 BBC: Outlook. See M 1405.
 1416 Radio Japan: Out and Around. See M 0516.
 1422 Radio Japan: Science Scene. See F 0522.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Japan: Japan Music Scene. See F 0530.
 1437 Radio Japan: Japan Diary. See M 0537.
 1440 Radio Japan: A Glimpse of Japan. See F 0540.
 1445 BBC: Talk. See M 0445.
 1450 Radio Japan: Commentary. See M 0350.
 1455 Radio Japan: Tokyo Pop-In. See M 0555.

Saturdays

1401 BBC: John Peel. See T 0330.
 1415 Radio Japan: This Week. See S 0115.
 1430 BBC: Sportsworld. The weekly sports magazine.

1500 UTC

[10:00 AM EST/7:00 AM PST]

FREQUENCIES

1500-1515 M,W,H,A,SRadio Ulan Bator, Mongolia	9795 13780	1500-1600 T-S KNLS, Anchor Point, Alaska	11715 (or 9750)
1500-1515 WYFR, Taiwan	11550	1500-1600 KTWR, Agana, Guam	11650
1500-1525 Radio Netherlands Int'l, Hilversum	5955 13770 15150 17575	1500-1600 KUSW, Salt Lake City, Utah	15590
	17605	1500-1600 Radio Australia, Melbourne	5995 6020 6035 6060
1500-1530 Radio Romania Int'l, Bucharest	11775 11940 15250 15335	1500-1600 S Radio Canada Int'l, Montreal	11955 17820
	17720 17745	1500-1600 Radio Jordan, Amman	9560
1500-1530 Radio Sweden, Stockholm	17740 11905	1500-1600 Radio Moscow World Service	11840 17670 21690 21790
1500-1530 A,S Radio Tanzania	5985 6105 7165	1500-1600 Radio RSA, Johannesburg S. Africa	7230 15270
1500-1530 M-A Vatican Radio, Vatican City	6248 7250 9645 11740 ML	1500-1600 Voice of America-Middle East Service	9700 15205 15260 21530
1500-1540 FEBA, Seychelles	11865	1500-1600 Voice of America-South Asia Service	6110 7125 9645 9700
1500-1550 Deutsche Welle, Köln, W. Germany	9735 11965 17765 21600	1500-1600 Voice of Hope, Lebanon	9350 9760 15205 15260
1500-1550 Radio Pyongyang, North Korea	9325 9640 9977 11760	1500-1600 Voice of the Mediterranean, Malta	6280 11925
1500-1555 Radio Beijing, China	11815 15165	1500-1600 Voice of Myanmar (Burma)	5990v
1500-1600 F ABC, Alice Springs, Australia	2310 (ML)	1500-1600 Voice of Nigeria, Lagos	7255
1500-1600 ABC, Perth, Australia	9610	1500-1600 Radio Korea, Seoul	5975 9870
1500-1600 F ABC, Tennant Creek, Australia	2325 (ML)	1500-1600 WHRI, Noblesville, Indiana	15105 (+ 9465 M-F)
1500-1600 All India Radio Northeast Svcs	3255 ML	1500-1600 WWCR, Nashville, Tennessee	15690
1500-1600 BBC World Service, London, England	9410 11750 11775 12095	1500-1600 WYFR, Okeechobee, Florida	5950 11830 13695 11580
	15070 15260 17640 17705	1515-1530 RCI European News Svc, Montreal	17750
	17780 21470 21660 21710	1515-1530 RCI European News Svc, Montreal	9555 11915 11935 15325
1500-1600 CBC Northern Quebec Service, Can	9625 (ML)	21545 (M-A add: 13650	21545 (M-A add: 13650
1500-1600 CBN, St. John's, Newfoundland	6160		15315 17820)
1500-1600 CBU, Vancouver, British Columbia	6160	1530-1600 Radio Omdurman, Sudan	11635 9550/9540
1500-1600 CFCF, Montreal, Quebec, Canada	6005	1530-1600 Radio Sofia, Bulgaria	11680 15310 17825
1500-1600 CFCN, Calgary, Alberta, Canada	6030	1530-1600 Radio Sweden, Stockholm	17880 21500 21655
1500-1600 CHNS, Halifax, Nova Scotia, Canada	6130	1530-1600 Radio Tanzania	5985 6105 7165 9684
1500-1600 Christian Science World Service	9530 11980 13625 13720	1530-1600 Radio Tirana, Albania	11835 9500
1500-1600 CKWX, Vancouver, British Columbia	6080	1530-1600 Swiss Radio International, Berne	13685 15430 17830 21630
1500-1600 CFRB, Toronto, Ontario	6070	1540-1555 M-A FEBA, Seychelles	11865
1500-1600 FEBA, Seychelles	9590 15330	1545-1600 Radio Pakistan	21740 21480 17895 17580
1500-1600 FEBC Radio Int'l, Philippines	11850	1545-1600 Vatican Radio, Vatican City	15605 13665
1500-1600 HCJB, Quito, Ecuador	11740 17890 25950 USB	1555-1600 M-A FEBA, Seychelles	11715 15090 17870
1500-1600 KHBN Guam	9830 ML		11865

SELECTED PROGRAMS

Sundays

1500 Radio Canada Int'l: Sunday Morning. See S 1404.
 1509 Deutsche Welle: Religion and Society. News and developments concerning the world's major religions.
 1513 Deutsche Welle: Through German Eyes. German journalists provide a perspective on world events.
 1515 BBC: International Recital. The annual series of live classical music concerts from London's BBC Concert Hall.
 1515 Radio Japan: Let's Learn Japanese. See S 0315.
 1523 Radio Canada Int'l (Europe): Current Affairs. An in-depth look at the news.
 1530 Radio Japan: DX Corner. See S 0330.
 1534 Deutsche Welle: Pop from Germany. A look at the German pop music scene.
 1554 Radio Japan: Viewpoint. See S 0354.

Mondays

1509 Deutsche Welle: Newsline Cologne. See M 1109.
 1515 BBC: Feature/Drama (except February 4th: With Great Pleasure). See M 0101.
 1516 Radio Japan: In Conversation. See M 0316.
 1523 Radio Canada Int'l: Current Affairs. See S 1523.
 1534 Deutsche Welle: Monday Special. An interview or report on an event or development with special relevance for Africa.
 1541 Radio Japan: Let's Practice Japanese. See M 0320.
 1550 Radio Japan: Commentary. See M 0350.
 1555 Radio Japan: Tokyo Pop-In. See M 0555.

Tuesdays

1509 Deutsche Welle: Newsline Cologne. See M 1109.

1515 BBC: A Jolly Good Show. Dave Lee Travis presents requests, the Record of the Month, and the album charts.

1516 Radio Japan: Out and Around. See M 0516.
 1522 Radio Japan: Radio Japan Journal (Part 1). See T 0322.

1523 Radio Canada Int'l: Current Affairs. See S 1523.

1530 Radio Japan: City Beat. See M 0530.

1534 Deutsche Welle: Insight. An in-depth feature, giving the background to political events and international developments.

1537 Radio Japan: Japan Diary. See M 0537.

1540 Radio Japan: Radio Japan Journal (Part 2). See T 0322.

1550 Radio Japan: Commentary. See M 0350.

1555 Radio Japan: Tokyo Pop-In. See M 0555.

Wednesdays

1509 Deutsche Welle: Newsline Cologne. See M 1109.
 1515 BBC: Traveling Tales (except February 20th, 27th: Talk). See M 2315.
 1516 Radio Japan: Out and Around. See M 0516.
 1522 Radio Japan: Asia Hotline. See W 0322.
 1523 Radio Canada Int'l: Current Affairs. See S 1523.
 1530 BBC: Funny That Way. Barry Cryer profiles top comedians, past and present (except February 27th: Two Cheers for February, a satirical look at the month just past).
 1530 Radio Japan: City Beat. See M 0530.
 1534 Deutsche Welle: Living in Germany. See M 0116.
 1537 Radio Japan: Japan Diary. See M 0537.

1540 Radio Japan: Asia Contact. See W 0340.
 1550 Radio Japan: Commentary. See M 0350.
 1555 Radio Japan: Tokyo Pop-In. See M 0555.

Thursdays

1509 Deutsche Welle: Newsline Cologne. See M 1109.

1515 BBC: Music for a While with Richard Baker.

Classical music with the well-known broadcaster.

1516 Radio Japan: Out and Around. See M 0516.

1522 Radio Japan: Business Today. See H 0322.
 1523 Radio Canada Int'l: Current Affairs. See S 1523.

1530 Radio Japan: City Beat. See M 0530.

1534 Deutsche Welle: Spotlight on Sport. Background stories and coverage of important sporting events.

1537 Radio Japan: Japan Diary. See M 0537.

1540 Radio Japan: Economy Update. See H 0340.

1550 Radio Japan: Commentary. See M 0350.

1555 Radio Japan: Tokyo Pop-In. See M 0555.

Fridays

1509 Deutsche Welle: Newsline Cologne. See M 1109.

1515 BBC: Music Review. See H 2315.

1516 Radio Japan: Music Mix. See F 0316.
 1523 Radio Canada Int'l: Current Affairs. See S 1523.

1534 Deutsche Welle: Economic Notebook. A look at the economic scene in Germany and around the world.

1550 Radio Japan: Commentary. See M 0350.

1555 Radio Japan: Tokyo Pop-In. See M 0555.

Saturdays

1509 Deutsche Welle: Africa Highlight. A weekly feature on an important topic concerning Africa.

1513 Deutsche Welle: Development Forum. Reports and interviews on projects and progress in Africa and Asia.

1515 BBC: Sportsworld. See A 1430.

1515 Radio Japan: This Week. See S 0115.

1523 Radio Canada Int'l: Current Affairs. See S 1523.

1534 Deutsche Welle: Science and Technology. See M 0234.

1600 UTC

[11:00 AM EST/8:00 AM PST]

FREQUENCIES

1600-1610 M,A FEBA, Mahe, Seychelles 11865
 1600-1610 Radio Lesotho 4800
 1600-1610 Vatican Radio, Vatican City 6248 7250 9645 11740
 1600-1615 Azad Kashmir Radio, Pakistan 7268 4980 3665
 1600-1615 Radio Tanzania 5985 6105 7165 9684
 1600-1630 All India Radio Northeastern Svcs 3255 ML
 1600-1630 Radio Jordan, Amman 9560
 1600-1630 Radio Pakistan 7287 13665 15605 17554
 21670
 1600-1630 A,S Radio Norway International, Oslo 15220 25730
 1600-1630 Radio Polonia, Warsaw, Poland 6135 9540
 1600-1630 M-F Radio Portugal, Lisbon 21530
 1600-1630 Radio Sofia, Bulgaria 11680 15310 17825
 1600-1630 Voice of Vietnam, Hanoi 9840 15010 12020
 1600-1640 UAE Radio, Dubai 11795 15320 15435 21605
 1600-1650 Deutsche Welle, Köln, W. Germany 6170 7225 15105 15595
 17825 21680
 1600-1700 F ABC, Alice Springs, Australia 2310 (ML)
 1600-1700 ABC, Perth, Australia 9610
 1600-1700 F ABC, Tennant Creek, Australia 2325 (ML)
 1600-1700 BBC World Service, London, England 9410 11775 12095 15070
 15260 17640 17705 21660
 1600-1700 CBC Northern Quebec Service, Can 9625 (ML)
 1600-1700 CBN, St. John's, Newfoundland 6160
 1600-1700 CBU, Vancouver, British Columbia 6160
 1600-1700 CFCF, Montreal, Quebec, Canada 6005
 1600-1700 CFCN, Calgary, Alberta, Canada 6030
 1600-1700 CFRB, Toronto, Ontario 6070
 1600-1700 CHNS, Halifax, Nova Scotia, Canada 6130
 1600-1700 Christian Science World Service 9530 13625 13745 21640
 1600-1700 CKWX, Vancouver, British Columbia 6080
 1600-1700 KSDA, Guam 11980
 1600-1700 KTWR, Agana, Guam 11650 11910 13720
 1600-1700 KUSW, Salt Lake City, Utah 15590
 1600-1700 Radio Australia, Melbourne 5995 6020 6035 6080
 7215 9580 9710 9770
 11800 13745
 (+ 6060 until 1630)

1600-1700 Radio Baghdad, Iraq 11860
 1600-1700 Radio Beijing, China 9570 15110 15130
 1600-1700 S Radio Canada Int'l, Montreal 11955 17820
 1600-1700 Radio France International, Paris 6175 11705 12015 15360
 17620 17795 17845 17850
 1600-1700 Radio Moscow World Service 7110 9655 9840 11630
 11890 12005 12010 12015
 15375 15540 17600 17670
 17710 21585 21630 21740
 (+11840 via Cuba)
 7230 15270
 1600-1700 Trans World Radio-Swaziland 15135
 1600-1700 Voice of America-Africa Service 7195 9575 11920 15410
 15445 15580 15600 17785
 17800 17870
 1600-1700 Voice of America-Middle East Service 3980 9700 15205 15260
 1600-1700 Voice of America-Asia Service 7125 9645 9700 9760
 15205 15260 15395
 1600-1700 Voice of Nigeria, Lagos 7255
 1600-1700 WHRI, Noblesville, Indiana 9465(M-F) 13760(M-A)
 15105(S) 21840(A,S)
 1600-1700 WINB, Red Lion, Pennsylvania 15295
 1600-1700 WRNO New Orleans, Louisiana 15420
 1600-1700 WWCR, Nashville, Tennessee 15690
 1600-1700 WYFR, Okeechobee, Florida 11830 13695 17750 15566
 11580 17612 21525 21615
 1610-1620 M-F Radio Botswana 3356 4830 7255
 1610-1625 M FEBA, Mahe, Seychelles 11865
 1615-1620 Vatican Radio, Vatican City 9645 11740
 1615-1630 Radio Budapest, Hungary 15160 15220 11910 9835
 9585 7220
 1615-1630 Radio Korea, Seoul, South Korea 9870
 1630-1655 M-A BRT Brussels, Belgium 17580 21810
 1630-1700 Radio Austria Int'l, Vienna 11780 13730 21490
 1630-1700 Radio Netherlands, Hilversum 15570 6020
 1645-1700 M-F Radio Botswana 3356 4830 7255
 1650-1700 Radio New Zealand, Wellington 15485

SELECTED PROGRAMS

Sundays

1600 Radio Canada Int'l: Sunday Morning. See S 1404.
 1609 Deutsche Welle: Arts on the Air. See S 1109.
 1615 BBC: Feature. See S 0230.
 1634 Deutsche Welle: German by Radio. See S 0134.
 1645 BBC: Letter from America. See S 0545.

Mondays

1609 Deutsche Welle: Newsline Cologne. See M 1109.
 1615 BBC: New Ideas. A look at new products and technological developments.
 1634 Deutsche Welle: Asia-Pacific Report. Correspondents' reports, interviews, and background news from the Asia-Pacific region.
 1635 BBC: Food Plants. Staple crops which feed our world (except February 25th: Talk, a short talk on any subject under the sun).
 1645 BBC: The World Today. News analysis on a selected location or event in the news.

Tuesdays

1609 Deutsche Welle: Newsline Cologne. See M 1109.
 1615 BBC: Omnibus. A half-hour program on practically any topic.
 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
 1645 BBC: The World Today. See M 1645.

Wednesdays

1609 Deutsche Welle: Newsline Cologne. See M 1109.
 1615 BBC: Rock/Pop Music (except February 6th:



The Classic Albums). See T 0630.
 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.

1645 BBC: The World Today. See M 1645.

Thursdays

1609 Deutsche Welle: Newsline Cologne. See M 1109.
 1615 BBC: Assignment. See H 0230.
 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
 1645 BBC: The World Today. See M 1645.

Fridays

1609 Deutsche Welle: Newsline Cologne. See M 1109.

Mail! The Kol Israel staff gets stacks of it!

1615 BBC: Science in Action. The latest in scientific developments.

1634 Deutsche Welle: Asia-Pacific Report. See M 1634.

1645 BBC: The World Today. See M 1645.

Saturdays

1609 Deutsche Welle: International Talking Point. See S 0419.
 1615 BBC: Sportsworld. See A 1430.
 1623 Deutsche Welle: Development Forum. See A 1513.
 1634 Deutsche Welle: Religion and Society. See S 1509.

1700 UTC

[12:00 PM EST/9:00 AM PST]

FREQUENCIES

1700-1725	Radio Netherlands, Hilversum	15570	6020	1700-1800	Radio RSA, Johannesburg	7230	15270	17790
1700-1730 A,S	Radio Norway	9655		1700-1800	Radio Surinam Int'l (via Brazil)	17750	(ML)	
1700-1730	Radio Prague Int'l, Czechoslovakia	5930	6055	7345	11990	7195	9575	11920 15410
1700-1730	Radio Sweden, Stockholm	6065	9615	1700-1800	Voice of America-Africa Service	15445	15580	15600 17785
1700-1750	Radio Bras, Brazil	15265		1700-1800	Voice of America-Middle East Service	17800	17870	
1700-1750	Radio Pyongyang, North Korea	9325	9640	9977	11760	3980	6040	9700 9760
1700-1800	BBC World Service, London	9410	11775	12095	15070	11760	15205	15260
		15260	15310	15400	17640	1700-1800	S-F WMLK Bethel, PA	15395
		17695	21470	21660		9465	WRNO, New Orleans, Louisiana	15420
1700-1800	CBC, Montreal	9625	(ML)	1700-1800	WWCR, Nashville, Tennessee	15690		
1700-1800	Christian Science World Service	13625	21640	1700-1800	WYFR, Okeechobee, Florida	11830	13695	15440 17750
1700-1800	ELWA, Monrovia, Liberia	11800		1715-1730	Radio Canada Int'l, Montreal	5995	7235	13650 15325
1700-1800	KUSW Salt Lake City, Utah	15590		1715-1800	Radio Pakistan	17885	21615	
1700-1800	Radio Australia, Melbourne	5995	6020	1730-1740	Radio Bayrak, Northern Cyprus	6150		
		7215	7240	1730-1755	BRT Brussels, Belgium	11695	5910	
		9770	11855	1730-1800	Radio Romania Int'l, Bucharest	15340	15365	17805 17860
1700-1800	Radio Baghdad, Iraq	11860		1730-1800	Radio Sofia, Bulgaria	11680	15310	17825
1700-1800	Radio Beijing, China	9570	11575	1730-1800	Radio Sta. Peace & Progress, USSR	6110	9705	11695 11745
1700-1800	Radio Japan, Tokyo	9695	11815	1730-1800		11775	11850	11910 11980
1700-1800	Radio Korea, Seoul	15575		1730-1800		12055	12065	15330 15480
1700-1800	Radio Moscow Africa Service	11690	11745	1730-1800		15585	17565	17615 17635
		11960	15230	1730-1800		17655	21715	
		15535	15585	1730-1800				
		17595	17615	1730-1800				
		21630	21715	1730-1800	Radio Tirana, Albania	7155	9480	
1700-1800	Radio Moscow World Service	11840	12010	1730-1800	Radio Truth	5015		
		15265	17585	1730-1800	(Clandestine intended for Zimbabwe)			
		17695	21585	1730-1800	(May be off the air at this time).			
1700-1800	Radio New Zealand, Wellington	15485		1730-1800	Swiss Radio Int'l, Berne	9535		
1700-1800	Radio Pyongyang, North Korea	9325	9640	1730-1800	Vatican Radio African Service	17710	17730	21650
		9977	11760	1730-1800	RAI Vienna	12010	13730	

1800 UTC

[1:00 PM EST/10:00 AM PST]

FREQUENCIES

1800-1815	Kol Israel	11585	11655	1800-1900V	Radio Tanzania	5985	6105	7165	9684
1800-1830	Radio Canada Int'l, Montreal	13670	15260	1800V-1900	SLBC World Service, Sri Lanka	9720	15120		
1800-1830 A,S	Radio Norway International, Oslo	17755		1800-1900	Voice of America-Africa Service	7195	9575	11920 15410	
1800-1830	Radio Prague, Czechoslovakia	9605				15445	15580	15600	17785
1800-1830	Radio Sweden, Stockholm	6065	7265			17800	17870	21485	
1800-1830	Voice of Ethiopia, Addis Ababa	9660		1800-1900	Voice of America-Middle East Service	6040	9700	9760	11760
1800-1830	Voice of Vietnam, Hanoi	15010	12010	1800-1900		15205			
1800-1845	All India Radio, New Delhi	11935	15360	1800-1900	WHRI, Noblesville, Indiana	13760	17830		
1800-1845	Trans World Radio, Swaziland	15210		1800-1900	WINB, Red Lion, Pennsylvania	15295			
1800-1855	Radio Mozambique, Maputo	9618	4855	1800-1900	WRNO, New Orleans, Louisiana	15420			
1800-1900 F	ABC, Alice Springs, Australia	2310	(ML)	1800-1900	WWCR, Nashville, Tennessee	15690			
1800-1900 F	ABC, Tennant Creek, Australia	2325	(ML)	1800-1900	WYFR, Okeechobee, Florida	11830	13695	15440	17885
1800-1900	BBC World Service, London	9410	12095	1800-1900		21500			
1800-1900	CBC Montreal	9625		1815-1900	Radio Bangladesh, Dacca	12032	15255		
1800-1900	CBN, St. John's, Newfoundland	6160		1830-1845	Radio Finland, Helsinki	11755	9550	6120	
1800-1900	CBU, Vancouver, British Columbia	6160		1830-1845	Radio Prague Int'l, Czechoslovakia	6055	7345		
1800-1900	CFCF, Montreal, Quebec, Canada	6005		1830-1855	BRT Brussels, Belgium	5910	11695	13675	
1800-1900	CFCN, Calgary, Alberta, Canada	6030		1830-1855	Radio Polonia, Warsaw, Poland	5995	6135	7125	7285
1800-1900	CFRB, Toronto, Ontario	6070				9525	11840		
1800-1900	CHNS, Halifax, Nova Scotia, Canada	6130		1830-1900	Radio Afghanistan, Kabul	9635	15510	17745	
1800-1900	Christian Science World Service	11650	13625	1830-1900 A,S	Radio Canada Int'l, Montreal	13670	15260	17820	
1800-1900	CKWX, Vancouver, British Columbia	6080		1830-1900	Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1800-1900	KVOH, Rancho Simi, California	17775		1830-1900	Radio Riyadh, Saudi Arabia	9705	9720		
1800-1900	KUSW, Salt Lake City, Utah	15590		1830-1900	Radio Tirana, Albania	7120	9480		
1800-1900 S-F	WMLK Bethel, Pennsylvania	9465		1830-1900	Swiss Radio International, Berne	9885	11955		
1800-1900	Radio Australia, Melbourne	5995	6020	1830-1900	Swiss Radio Int'l European Service	3985	6165	9535	
1800-1900	Radio Havana Cuba	15345		1840-1850 M-A	Voice of Greece, Athens	11645	12105	15625	
1800-1900	Radio Moscow World Service	11765	11840	1845-1855vIRR	Africa No. 1, Gabon	15475			
1800-1900	Radio New Zealand, Wellington	15485		1845-1900	All India Radio, New Delhi	7412	9665	9910	11620
1800-1900	Radio RSA, Johannesburg, S. Africa	17765	15270	1845-1900		11860	11935		
1800-1900 A,S	Radio for Peace Int'l, Costa Rica	13630	21566						

1900 UTC

[2:00 PM EST/11:00 AM PST]

FREQUENCIES

1900-1910	Radio Tanzania	5985	6105	7165	9684
1900-1910	M-A Vatican Radio	6190	6248	7250	9645
		17710	17730	21650	
1900-1915	Sierra Leone Brdcstng Co., Freetown	3316			
1900-1920	Radio Botswana	3356	4830		
1900-1920v	Radio Omdurman, Sudan	11635			
1900-1925	Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1900-1930	Radio Afghanistan, Kabul	9635	15510	17745	
1900-1930	M-F Radio Budapest, Hungary	15160	11910	9835	9585
		7220	6110		
1900-1930	M-F Radio Canada Int'l, Montreal	13670	15260	17820	
1900-1930	Radio Japan General Service, Tokyo	11850	11865	15270	
1900-1930	A,S Radio Norway International, Oslo	15220	15235	21705	25730
1900-1930	M-F Radio Portugal, Lisbon	11740	15250	21530	
1900-1930	Radio Sofia, Bulgaria	11680	15310	17825	
1900-1930	Voice of Vietnam, Hanoi	9840	12020	15010	
1900-1945	All India Radio, New Delhi	7412	9665	9910	11620
		11860	11935		
1900-1950	Deutsche Welle, Köln, W. Germany	11785	11810	13790	15390
		17810			
1900-2000	BBC World Service, London, England	9410	12095	15070	15400
1900-2000	CBC, Montreal	9625			
1900-2000	CBN, St. John's, Newfoundland	6160			
1900-2000	CBU, Vancouver, British Columbia	6160			
1900-2000	CFCF, Montreal, Quebec, Canada	6005			
1900-2000	CFCN, Calgary, Alberta, Canada	6030			
1900-2000	CFRB, Toronto, Ontario	6070			
1900-2000	CHNS, Halifax, Nova Scotia, Canada	6130			
1900-2000	Christian Science World Service	11650	13625	21640	
		(+17555 & 15610 A,S)			
		(+21780 M-F)			
1900-2000	CKWX, Vancouver, British Columbia	6080			
1900-2000	ELWA, Monrovia, Liberia	11800			
1900-2000	GBC Radio, Accra, Ghana	6130			
1900-2000	HJCB European Service, Ecuador	17790	21480	25950ssb	
1900-2000	KVOH, Rancho Simi, California	17775			
1900-2000	KUSW, Salt Lake City, Utah	15590			
1900-2000	Radio Algiers, Alger	9510	9685	15215	
1900-2000	Radio Australia, Melbourne	5995	6020	6035	6080
		7205	7215	7240	9580
		11855			

1900-2000	Radio Beijing, China	9440	11515
1900-2000	Radio Moscow African Svc	11960	12035 15230 15520
		17655	(In English & Zulu)
1900-2000	Radio Moscow World Service	11765	11840 12010 12060
		13605	15405 15540 15580
		17570	17670 21630 21740
		21630	
1900-2000	Radio New Zealand, Wellington	15485	
1900-2000	A,S Radio for Peace Int'l, Costa Rica	13630	21566
1900-2000	M-F RAE, Buenos Aires, Argentina	15345	
1900-2000	Solomon Islands Broadcasting Co.	5020	
1900-2000	Spanish National Radio, Madrid	11790	15280 15375 15395
1900-2000	Voice of America-Africa Service	7195	15410 15445 15580
		15600	17785 17800 17870
		21485	
1900-2000	Voice of America-Middle East Service	6040	9700 9760 11760
		15205	
1900-2000	Voice of America-Pacific Service	9525	11870 15180
1900-2000	WHRI, Noblesville, Indiana	13760	17830
1900-2000	WINB, Red Lion, Pennsylvania	15295	
1900-2000	S-F WMLK, Bethel, Pennsylvania	9465	
1900-2000	WRNO, New Orleans, Louisiana	15420	
1900-2000	WWCR, Nashville, Tennessee	15690	
1900-2000	WYFR, Okeechobee, Florida	11830	13695 15440 15566
		17612	17885 21615
1920-1930	M-A Voice of Greece, Athens	9395	11645
1930-2000	Radio Austria International, Vienna	5945	6155 12010 13730
1930-2000	A,S Radio Budapest, Hungary	6110	7220 9585 9835
1930-2000	M-F Radio Canada Int'l, Montreal	5995	7235 11945 15325
		17875	
1930-2000	Radio Korea, Seoul	6480	7550 15575
1930-2000	Radio Romania Int'l, Bucharest	5955	9690 9750 11810
1930-2000	Radio Sofia, Bulgaria	11660	11765 15330
1930-2000	M Radio Tallin, Estonia	5925	
1930-2000	Radio Yugoslavia, Belgrade	7215	9660 11735
1930-2000	Voice of the Islamic Republic Iran	6080	n 9022 15084
1935-1955	RAI, Rome, Italy	7275	9710 11800
1940-2000	M,W,H,A,S Radio Ulan Bator, Mongolia	11850	12050
1945-2000	All India Radio, New Delhi	11935	
1945-2000	Radio Korea, Seoul	5975	9870
1950-2000	Vatican Radio	6190	7250 9645

QSLs courtesy of Donald Choleva,
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Broadcasting Service.



2000 UTC

[3:00 PM EST/12:00 PM PST]

FREQUENCIES

2000-2010 M,W,H,A,S Radio Ulan Bator, Mongolia 11850 12050
 2000-2010 Sierra Leone Brdcstng Co., Freetown 3316
 2000-2010 Vatican Radio, Vatican City 6190 7250 9645
 2000-2030 Kol Israel, Jerusalem 11605 11745 12077 15090
 15485 17575
 2000-2030 Radio Korea, Seoul 6480 7550 15575
 2000-2030 M-F Radio Portugal 15250
 2000-2030 Radio Prague Int'l, Czechoslovakia 5930 6055 7345 11990
 2000-2030 Radio Romania Int'l, Bucharest 5955 9690 9750 11810
 2000-2030 Voice of the Islamic Republic Iran 6080 9022 15084
 2000-2050 Radio Pyongyang, North Korea 6576 9345 9640 9977
 2000-2100 M-AABC, Alice Springs, Australia 2310 (ML)
 2485
 2000-2100 ABC, Katherine, Australia 2325 (ML)
 2000-2100 M-AABC, Tennant Creek, Australia 2325 (ML)
 2000-2100 BBC World Service, London, England 5975 9410 12095 15070
 15260 15400 17755 17760
 17880
 2000-2100 CBC, Montreal 9625 (ML)
 2000-2100 VOA Middle East Service 6040 9700 9760 11710
 11905 15205 15300 17885
 21540 21570
 2000-2100 CBN, St. John's, Newfoundland 6160
 2000-2100 CBU, Vancouver, British Columbia 6160
 2000-2100 CFCF, Montreal, Quebec, Canada 6005
 2000-2100 CFCH, Calgary, Alberta, Canada 6030
 2000-2100 CFRB, Toronto, Ontario 6070
 2000-2100 CHNS, Halifax, Nova Scotia, Canada 6130
 2000-2100 Christian Science World Service 9455 9495 11980 13625
 13770 15610 17555
 2000-2100 CKWX, Vancouver, British Columbia 6080
 2000-2100 KHBN Guam 9820 ML
 2000-2100 KUSW, Salt Lake City, Utah 15590
 2000-2100 KVOC, Rancho Simi, California 17775
 2000-2100 ELWA, Monrovia, Liberia 11800

2000-2100 Radio Australia, Melbourne 6020 6035 7205 7215
 7240 9580 11855 13745
 (+6080 & 5995 until 2030)
 11860 13660
 2000-2100 Radio Baghdad, Iraq 9440 9920 11500 11715
 15110
 11800
 2000-2100 Radio Havana Cuba 11715 11775 11960 12035
 15520 15535 21630 21740
 2000-2100 Radio Moscow Africa Service 7330 11630 11930 15185
 17695
 2000-2100 Radio Moscow British Service 7315 11630 11670 11805
 11890 12060 13605 15185
 15315 15355 15560 17695
 2000-2100 Radio Moscow World Service 15485
 2000-2100 M-F Radio for Peace Int'l, Costa Rica 13630 21566
 2000-2100 Radio Sta. Peace & Progress, USSR 9470 9820 11830 11880
 11980 15260
 2000-2100 Radio New Zealand, Wellington 5020
 2000-2100 Solomon Islands Broadcasting Co. 7195 15410 15445 15580
 15600 17785 17800 17870
 15205
 2000-2100 Voice of America-Africa Service 6280
 2000-2100 Voice of Hope, Lebanon 11753 11785
 2000-2100 Voice of Indonesia, Jakarta 13760 17830
 2000-2100 WHRI, Noblesville, Indiana 15185
 2000-2100 WINB, Red Lion, Pennsylvania 15420
 2000-2100 WRNO, New Orleans, Louisiana 15690
 2000-2100 WWCR, Nashville, Tennessee 11830 13695 15440 15566
 17612 17885 21525 21615
 2000-2100 WYFR, Okeechobee, Florida 12085 15095
 2005-2100 Radio Damascus, Syria 9860 13700 15560
 2030-2100 Radio Netherlands Int'l, Hilversum 9840 12020 15010
 2030-2100 Voice of Vietnam, Hanoi 7412 9665 9910 11620
 2045-2100 All India Radio, New Delhi 11715 15265

2100 UTC

[4:00 PM EST/1:00 PM PST]

FREQUENCIES

2100-2105 Radio Damascus, Syria 12085 15095
 2100-2105 Radio New Zealand, Wellington 15485
 2100-2115 Radio Prague Int'l, Czechoslovakia 5930 6055 7345 11990
 2100-2125 Radio Netherlands Int'l, Hilversum 9860 13700 15560
 2100-2130 Radio Beijing, China 3985 11715 15110
 2100-2130 Radio Budapest, Hungary 11910 15160 9835 9585
 7220 6110
 2100-2130 Radio Finland, Helsinki 6120 11755 15400
 2100-2130 Radio Japan General Service, Tokyo 11815 11835 15270 17765
 17810 17890
 2100-2130 Radio Korea, Seoul 15575 7550 6480
 2100-2130 M Radio Ljubljana, Yugoslavia 5980 7240 9620
 2100-2130 A,S Radio Norway, Oslo 15165
 2100-2130 Radio Romania Int'l, Bucharest 9690 9750 11810 11940
 2100-2130 Radio Sweden, Stockholm 9655 11705
 2100-2130 Sierra Leone Brdcstng Co., Freetown 3316
 2100-2130 Swiss Radio International, Berne 9885 13635 15525 12035
 2100-2130 Vatican Radio 17710 17730 21650
 2100-2150 Deutsche Welle, Kolin, West Germany 9670 9765 11785 13780
 15435
 2100-2200v All India Radio, New Delhi 7412 9665 9910 11620
 11715 15265
 2100-2200 BBC World Service, London, England 5975 9410 12095 15070
 15260 15400 17755 17760
 17880
 2100-2200 CBC Montreal 9625
 2100-2200 CBN, St. John's, Newfoundland 6160
 2100-2200 CBU, Vancouver, British Columbia 6160
 2100-2200 CFCF, Montreal, Quebec, Canada 6005
 2100-2200 Radio for Peace Int'l 21566
 2100-2200 CFRB, Toronto, Ontario 6070
 2100-2200 CHNS, Halifax, Nova Scotia, Canada 6130
 2100-2200 Christian Science World Service 9455 9495 13625 13770
 15310 15610 17555
 2100-2200 CKWX, Vancouver, British Columbia 6080
 2100-2200 ELWA, Monrovia, Liberia 11800

2100-2200 KHBN Guam 9820 ML
 2100-2200 T-A KUSW, Salt Lake City, Utah 15590
 2100-2200 KVOH, Rancho Simi, California 17775
 2100-2200 Radio Angola Int'l Svc, Luanda 3355 9535
 2100-2200 Radio Australia, Melbourne 11880 15465 17795
 (until 2130: 7215 13745)
 (from 2130: 15240)
 2100-2200 Radio Baghdad, Iraq (to Europe) 13660
 2100-2200 Radio Baghdad, Iraq 11860
 2100-2200 Radio Beijing, China 9920 11500
 2100-2200 Radio Cairo, Egypt 9900
 2100-2200 Radio Havana Cuba 11800 17860
 2100-2200 Radio Kiev, Ukraine 9865
 2100-2200 Radio Moscow World Service 7115 7150 7315 9685
 11670 11745 11775 11805
 11840 11890 11985 12040
 2100-2200 Solomon Islands Broadcasting Co. 5020 9545
 2100-2200 Voice of America-Africa Service 7195 15410 15445 15580
 15600 17785 17800 17870
 21485
 2100-2200 Voice of America-Middle East Service 6040 9700 9760 11760
 15205 11710
 2100-2200 Voice of America-Pacific Service 11870 15185 17735
 2100-2200 Voice of Hope, Lebanon 6280
 2100-2200 Voice of Turkey, Ankara 9795
 2100-2200 WHRI, Noblesville, Indiana 13760 17830
 2100-2200 WINB, Red Lion, Pennsylvania 15185
 2100-2200 WRNO Worldwide, Louisiana 15420
 2100-2200 WWCR, Nashville, Tennessee 15690
 2100-2200 WYFR, Okeechobee, Florida 11830 13695 15566 17615
 17885 21525 21615
 2105-2200 Radio New Zealand, Wellington 17675
 2110-2200 Radio Damascus, Syria 12085 15095
 2130-2200 HCJB, Quito, Ecuador 15270 17790 25950ssb
 2130-2200 Radio Canada Int'l, Montreal 11880 13670 15150 17820
 2130-2200 Radio Japan, Tokyo 11815 11835 15270 17765
 17810 21610
 2130-2200 Radio Sofia, Bulgaria 11660 11765 15330

2200 UTC

[5:00 PM EST/2:00 PM PST]

FREQUENCIES

2200-2205	Radio Damascus, Syria	12085	15095
2200-2215	M-AABC, Alice Springs, Australia	2310	(ML)
2200-2215	ABC, Tennant Creek, Australia	2325	(ML)
2200-2215	Sierra Leone Brdcstng Co., Freetown	3316	
2200-2215	M-F Voice of America-Caribbean Service	9640	11880 15225
2200-2225	RAI, Rome, Italy	5990	7235 9710
2200-2230	ABC, Katherine, Australia	2485	
2200-2230	All India Radio, New Delhi	7412	9665 9910 11620
			11715 15265
2200-2230	BRT Brussels, Belgium	5910	9925
2200-2230	Radio Prague, Czechoslovakia	5930	6055 7345
2200-2230	S KGEI, San Francisco, California	15280	
2200-2230	Radio Canada Int'l, Japan relay	11705	
2200-2230	A,S Radio Norway International, Oslo	15195	
2200-2245	Radio Yugoslavia, Belgrade	5955	9620 11735 15165
2200-2245	WINB Red Lion, PA	15295	
2200-2300	BBC World Service, London, England	5975	6005 6175 6195
		7325	9410 9590 9915
		11750	12095 15070 15260
		15400	17750 17830
2200-2300	CBC Northern Quebec Svc, Canada	9625	
2200-2300	CBN, St. John's, Newfoundland	6160	
2200-2300	CBU, Vancouver, British Columbia	6160	
2200-2300	CFCF, Montreal, Quebec, Canada	6005	
2200-2300	CFCN, Calgary, Alberta, Canada	6030	
2200-2300	CFRB, Toronto, Ontario	6070	
2200-2300	CHNS, Halifax, Nova Scotia, Canada	6130	
2200-2300	Christian Science World Service	9465	15225 15275 15300
		15405	15610 17555
2200-2300	CKWX, Vancouver, British Columbia	6080	
2200-2300	VOA Middle East	9530	11905 11960 15225
		15445	17855
2200-2300	KHBN Guam	9820	ML
2200-2300	T-A KUSW, Salt Lake City, Utah	15590	
2200-2300	Radio Australia, Melbourne	11880	13605 15240 15465
		17715	17795 21740

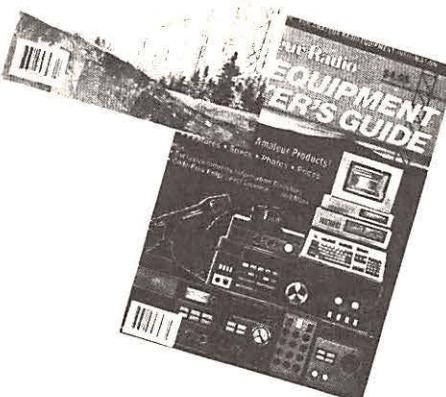
2200-2300v	Radio Cairo, Egypt	9900
2200-2300	Radio Canada Int'l, Montreal	9760 11945
2200-2300	Radio Korea, Seoul	15575
2200-2300	Radio Moscow North American Svc	11670 11690 11710 11780
		11800 12040 12050 13605
		15315 15355 15425 15580
		15595 17735
2200-2300	Radio Moscow World Service	11615 11745 11775 11985
	(from 2230 add: 7315 15480 17655 17850 17890)	15140 15560 17570 21690
2200-2300	Radio New Zealand, Wellington	17675
2200-2300	Radio for Peace Int'l, Costa Rica	13630 21566
2200-2300	Radio Sta. Peace & Progress, USSR	9470 9820 11830 11880
		11980 15260
2200-2300	Radio Tonga, Kingdom of Tonga	5030v
2200-2300	United Arab Emirates R, Abu Dhabi	9600 11985 13605
2200-2300	Voice of America-East Asia Service	7120 9770 11760 15185
		15290 15305 17735 17820
2200-2300	Voice of America-Eur/Pac. Service	9852 11805 15345 15370
		17610
2200-2300	Voice of Free China, Taiwan	17750 21720
2200-2300	Voice of Hope, Lebanon	6280
2200-2300	WHRI, Noblesville, Indiana	13760 17830
2200-2300	WRNO Worldwide, Louisiana	15420
2200-2300	WWCR, Nashville, Tennessee	15690
2200-2300	WYFR, Okeechobee, Florida	11580 11830 13695 17612
		17885 21525
2205-2230	Vatican Radio, Vatican City	7125 9615 11830 15105
2230-2300	Kol Israel, Jerusalem	9435 11605 11655 11745
		12077 17575
2230-2300	Radio Polonia, Warsaw, Poland	5995 6135 7125 7270
2230-2300	Radio Sofia, Bulgaria	11660 15330
2230-2300	Radio Tirana, Albania	7215 9480
2230-2300	Radio Vilnius, Lithuania	6100 9675
2230-2300	Swiss Radio Int'l, European Service	6190
2230-2300	Voice of Vietnam, Hanoi	9840 12020 15010
2245-2300	WINB Red Lion, PA	15145

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2300 UTC

[6:00 PM EST/3:00 PM PST]

FREQUENCIES

2300-2310	Sierra Leone Brdgstng Co., Freetown	3316	2300-0000	Radio Havana Cuba	11930
2300-2325	Radio Finland, Helsinki	11755 15185	2300-0000	Radio Japan General Service, Tokyo	11835 15195 17765 17810
2300-2330	Radio Canada Int'l, Montreal	9755 11730	2300-0000	Radio Korea, Seoul	21610
2300-2330	Radio Sofia, Bulgaria	11660 11720	2300-0000	Radio Luxembourg	15575
2300-2330	Radio Vilnius, Lithuania	6100 7400 9865 11790	2300-0000	Radio Moscow North American Svc.	6090
		13645 15455			7150 7315 11710 11780
2300-2345	WYFR, Okeechobee, Florida	5985 11580 15170	2300-0000		11800 12040 12050 13605
2300-2350	Radio Pyongyang, North Korea	11735 13650	2300-0000		15315 15355 15425 15580
2300-0000	Adventist World Radio, Costa Rica	9725 11870	2300-0000	Radio Moscow World Service	15595 17735
2300-0000	BBC World Service, London, England	5975 6175 6195 7325			12005 15140 15480 15550
		9410 9590 9915 11750			15590 17570 17600 17620
		15260	2300-0000		17655 17730 17850 21585
2300-0000	CBC Montreal	9625	2300-0000	Radio for Peace Int'l, Costa Rica	21690 21790
2300-0000	CBN, St. John's, Newfoundland	6160	2300-0000	Radio Thailand, Bangkok	13630 21566
2300-0000	CBU, Vancouver, British Columbia	6160	2300-0000	Radio Tonga, Kingdom of Tonga	4830 9655 11905
2300-0000	CFCF, Montreal, Quebec, Canada	6005	2300-0000	United Arab Emirates R, Abu Dhabi	5030v
2300-0000	CFCN, Calgary, Alberta, Canada	6030	2300-0000	Voice of America-East Asia Service	9600 11985 13605
2300-0000	CFRB, Toronto, Ontario	6070	2300-0000		7120 9770 11760 15185
2300-0000	CHNS, Halifax, Nova Scotia, Canada	6130	2300-0000	Voice of Turkey, Ankara	15290 15305 17735 17820
2300-0000	Christian Science World Service	9465 15225 15275 15300	2300-0000	WHRI, Noblesville, Indiana	9445 9665 9685 17880
		15405 15610 17555	2300-0000	WINB, Red Lion, Pennsylvania	15145
2300-0000	CKWX, Vancouver, British Columbia	6080	2300-0000	WRNO, New Orleans, Louisiana	15420
2300-0000	KHBN, Guam	9820 ML	2300-0000	WWCR, Nashville, Tennessee	15690
2300-0000	KSDA, Guam	15125	2305-2355	Radio Polonia, Warsaw, Poland	5995 6135 7125 7145
2300-0000	T-A KUSW, Salt Lake City, Utah	15590	2315-0000	All India Radio, New Delhi	9535 9910 11715 11745
2300-0000	Radio Australia, Melbourne	11880 13605 15240 15465	2330-0000	Radio Tirana, Albania	6120 9760 11825
		17630 17715 17750 17795	2330-0000	Voice of Vietnam, Hanoi	9840 12020 15010
		21740	2345-0000	Radio Korea, Seoul	7275

PROGRAMS

Sundays

2305 BBC: Words of Faith. See S 0540.
 2308 Radio Canada Int'l: The Shortwave Listeners' Digest. See S 0038.
 2310 BBC: Book Choice. See S 0225.
 2315 BBC: Letter from America. See S 0545.
 2315 Radio Japan: Hello from Tokyo. See S 0515.
 2330 BBC: Feature. See S 1401.
 2354 Radio Japan: Viewpoint. See S 0354.

Mondays

2305 BBC: Commentary. Background to the news from a wide range of specialists.
 2308 Radio Canada Int'l: Current Affairs. See S 1523.
 2310 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
 2315 BBC: Travelling Tales. Scottish story-tellers strut their stuff (except February 18th, 25th: Talk, a short talk on any subject under the sun).
 2316 Radio Japan: Out and Around. See M 0516.
 2322 Radio Japan: People. See M 0522.
 2330 BBC: Multitrack 1: Top 20. Tim Smith presents what's hot on the British pop music charts.
 2330 Radio Japan: City Beat. See M 0530.
 2337 Radio Japan: Japan Diary. See M 0537.
 2340 Radio Japan: Crosscurrents. See M 0540.
 2350 Radio Japan: Commentary. See M 0350.
 2355 Radio Japan: Tokyo Pop-In. See M 0555.

Tuesdays

2305 BBC: Commentary. See M 2305.
 2308 Radio Canada Int'l: Current Affairs. See S 1523.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: International Recital. See S 1515.
 2316 Radio Japan: Out and Around. See M 0516.

2322 Radio Japan: Radio Japan Journal (Part 1). See T 0322.
 2330 Radio Japan: City Beat. See M 0530.
 2337 Radio Japan: Japan Diary. See M 0537.
 2340 Radio Japan: Radio Japan Journal (Part 2). See T 0322.
 2350 Radio Japan: Commentary. See M 0350.
 2355 Radio Japan: Tokyo Pop-In. See M 0555.

Wednesdays

2305 BBC: Commentary. See M 2305.
 2308 Radio Canada Int'l: Current Affairs. See S 1523.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Good Books. See M 0315.
 2316 Radio Japan: Out and Around. See M 0516.
 2322 Radio Japan: Asia Hotline. See W 0322.
 2330 BBC: Multitrack 2. Graham Bannerman presents new pop records, interviews, news, and competitions.
 2330 Radio Japan: City Beat. See M 0530.
 2337 Radio Japan: Japan Diary. See M 0537.
 2340 Radio Japan: Asia Contact. See W 0340.
 2350 Radio Japan: Commentary. See M 0350.

Thursdays

2305 BBC: Commentary. See M 2305.
 2308 Radio Canada Int'l: Current Affairs. See S 1523.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Music Review. Classical music events and developments from around the world.
 2316 Radio Japan: Out and Around. See M 0516.
 2322 Radio Japan: Business Today. See H 0322.
 2330 Radio Japan: City Beat. See M 0530.
 2337 Radio Japan: Japan Diary. See M 0537.
 2340 Radio Japan: Economy Update. See H 0340.
 2350 Radio Japan: Commentary. See M 0350.

Fridays

2305 BBC: Commentary. See M 2305.

2308 Radio Canada Int'l: Current Affairs. See S 1523.

2310 BBC: Financial News. See M 2310.
 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.

2316 Radio Japan: Out and Around. See M 0516.
 2322 Radio Japan: Science Scene. See F 0522.

2330 BBC: Multitrack 3. Sarah Ward surveys the British alternative music scene.

2330 Radio Japan: Japan Music Scene. See F 0530.

2337 Radio Japan: Japan Diary. See M 0537.

2340 Radio Japan: A Glimpse of Japan. See F 0540.
 2350 Radio Japan: Commentary. See M 0350.

Saturdays

2305 BBC: Words of Faith. See S 0540.
 2308 Radio Canada Int'l: Innovation Canada. See S 0008.
 2310 BBC: Book Choice. See S 0245.
 2315 BBC: A Jolly Good Show. See T 1515.
 2315 Radio Japan: This Week. See S 0115.



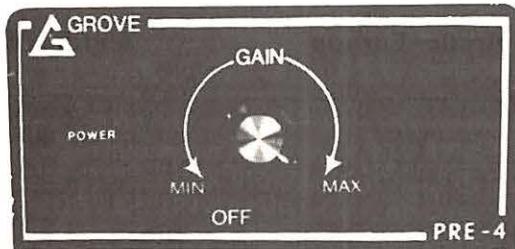
A live newscast at Radio Korea.

From Grove Enterprises

3
New
Products

The Leader in Listening Accessories

For Scanning Enthusiasts



GROVE PRE4 SCANNER BOOSTER

Bring in those weak, distant signals with the new Grove PRE4 Scanner Booster. A powerful tool for the serious scanner listener, the PRE4's transistorized, low-noise amplifier adds up to 20 dB of gain to those hard-to-hear signals. A front panel allows you to customize the amount of amplification. Mounts indoors or out.

Using two scanners? The PRE4 has two jacks for simultaneous operation of any two 25-1300 MHz radios! In fact, the Grove Scanner Booster is perfect for any scanner, general coverage VHF/UHF receiver -- even TV and FM.

The new Grove PRE4 Scanner Booster is now available from Grove Enterprises for \$79.95 plus \$3.50 UPS.

(Not recommended in strong signal areas.)



GROVE FTR5 SCANNER FILTER

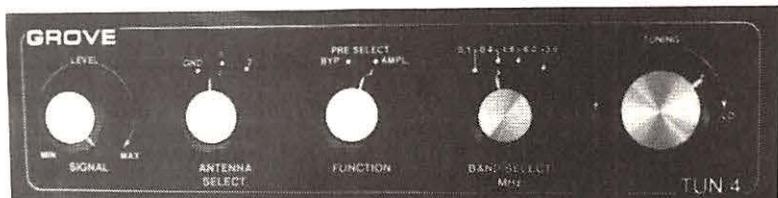
Interference. It's become a real problem. A simple notch filter is no longer the answer. To screen out those increased and multiple source disruptions Grove has designed the new FTR5 Scanner Filter!

A high-pass filter removes shortwave feedthrough, while band-reject filters remove FM and TV broadcast interference automatically. An adjustable 100-220 MHz notch filter allows you to reduce or eliminate single-frequency interference. High-Q microstripline circuitry rejects deep interference.

A diode shunt array protects your scanner from nearby lightning strikes and high-powered transmitters. A rugged weatherproof enclosure allows for masthead mounting.

The FTR5 with F connectors is just \$49.00 (\$54 if ordered with BNC, Motorola, PL259, or N connectors) plus \$2 UPS.

Improve Your Shortwave Reception



THE TUN4 MINITUNER PLUS

Grove Enterprises has taken two of their most popular products and combined them into one. The result is a listening tool so powerful that it improves reception over the entire 100 kHz to 30 MHz range! It's the all new TUN4 from Grove Enterprises!

Tune in that weak station. Then switch on the TUN4's low-noise, high-gain transistor amplifier. Peak the tuning control and hear an astounding improvement in signal strength.

You can also switch the TUN4 between two antennas, interconnect receivers or even remove it from the circuit altogether--all at the touch of a switch. Fine tune your listening with the Grove TUN4. Just \$139.95 plus \$4.00 UPS.

Business Hours: 9am-5pm EST Monday through Friday
Orders Only 1-800-438-8155 • Information 704-837-9200
Send orders to Grove Enterprises • PO Box 98, Brasstown, NC 28902

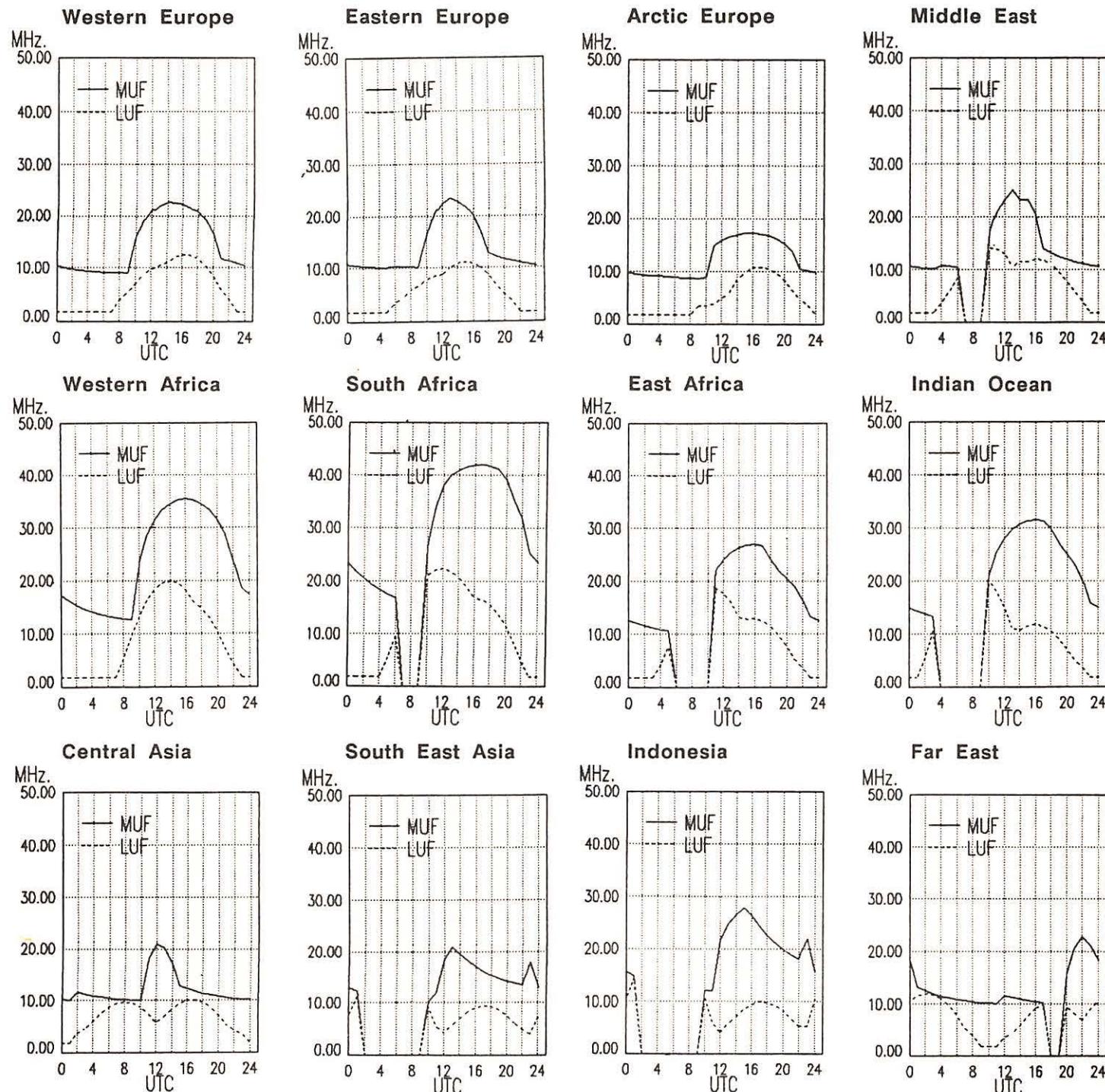
How to use the propagation charts

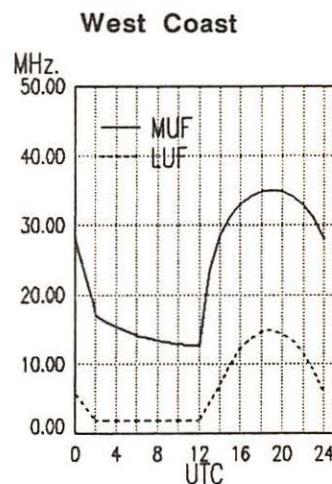
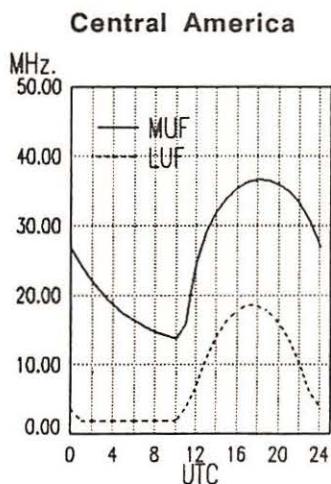
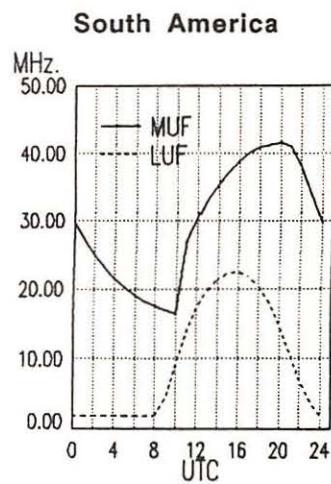
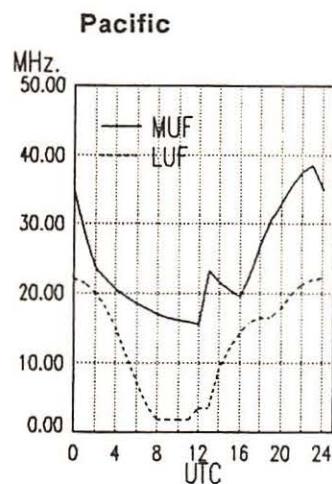
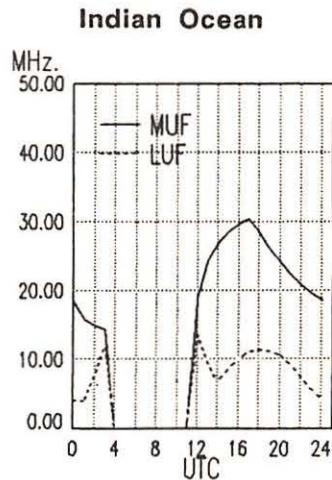
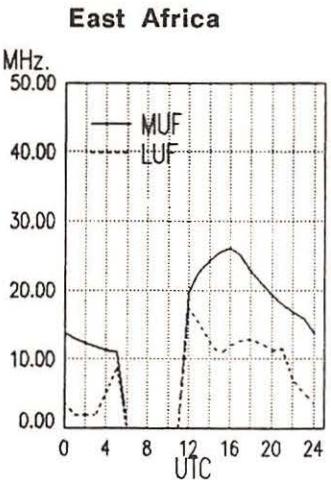
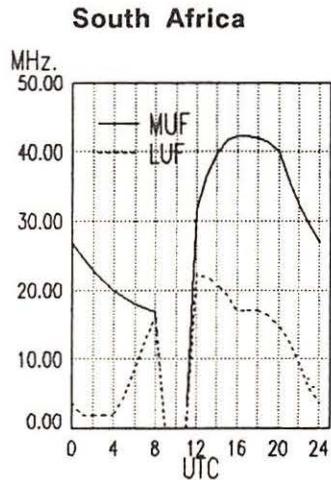
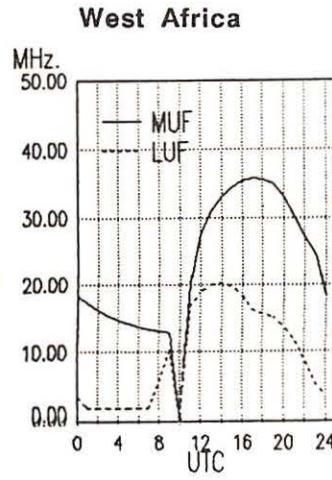
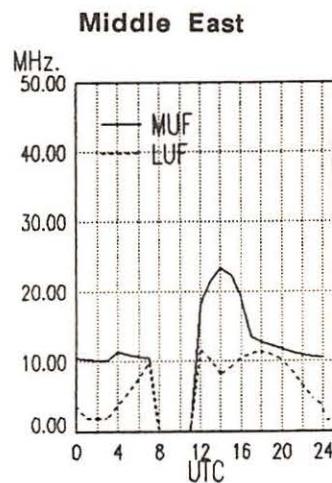
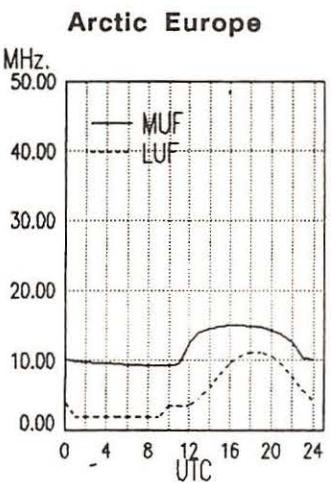
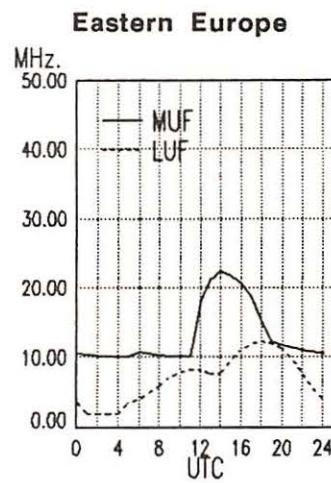
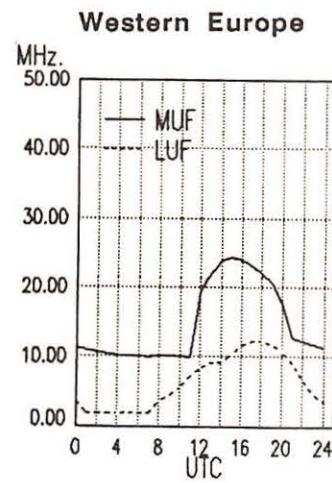
Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

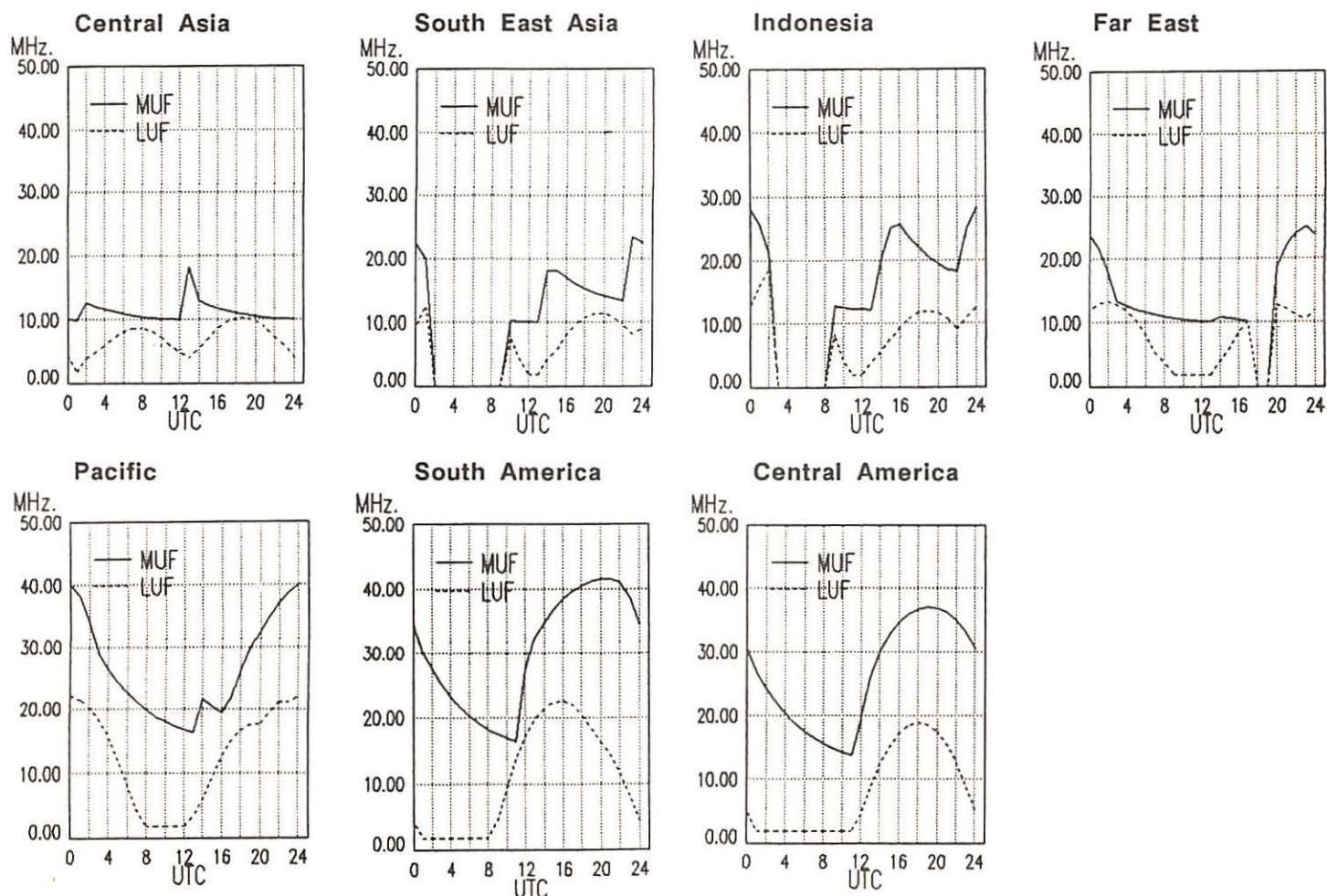
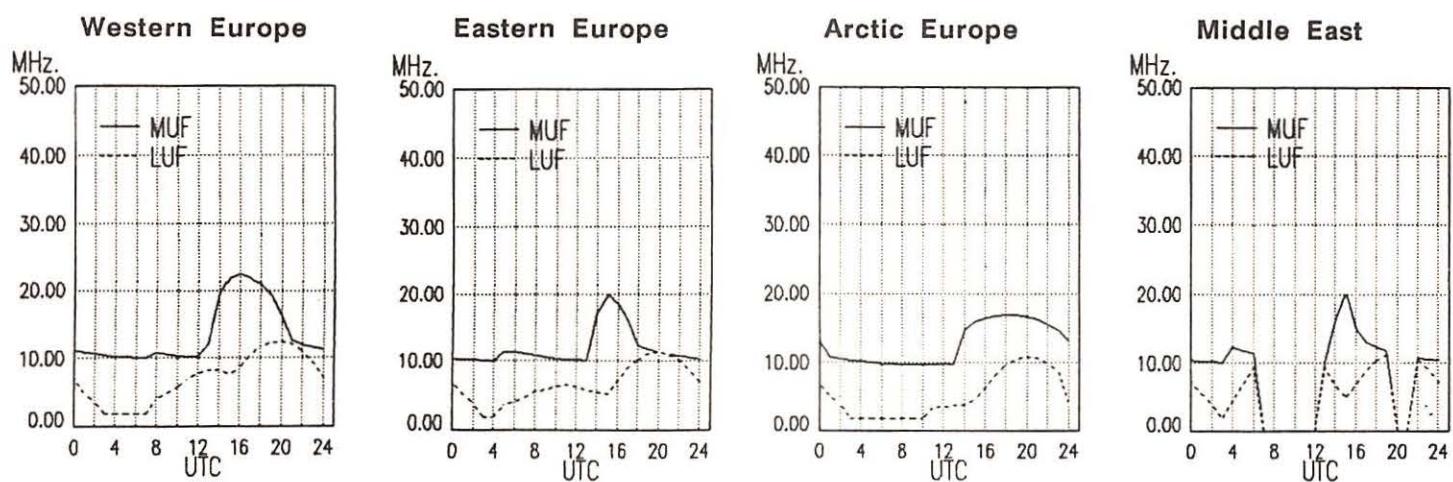
Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Usable Frequency (MUF) and the lower line the Lowest Usable Frequency (LUF) as indicated on the vertical axis of the graph.

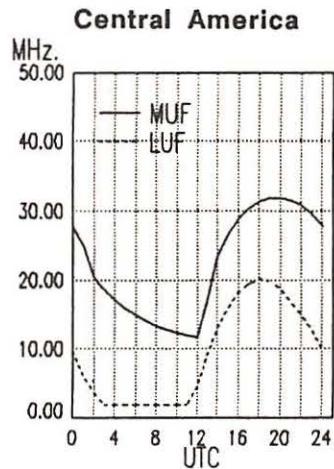
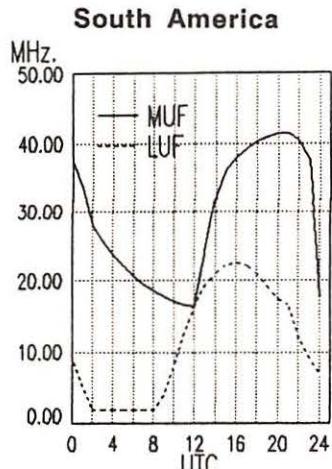
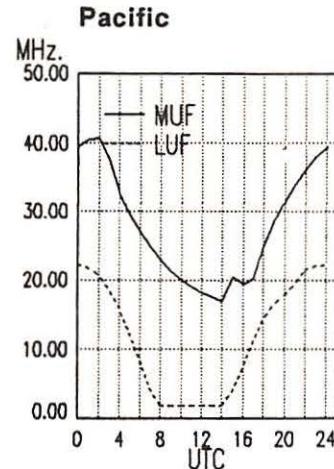
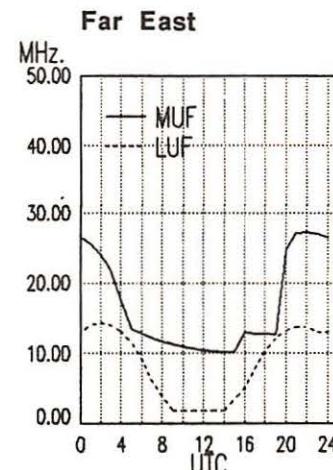
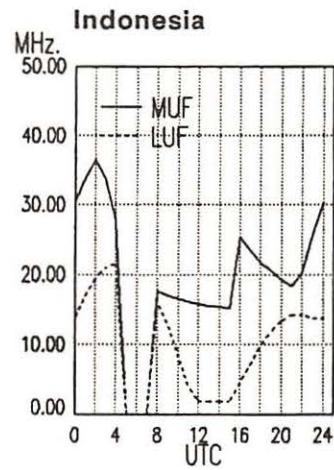
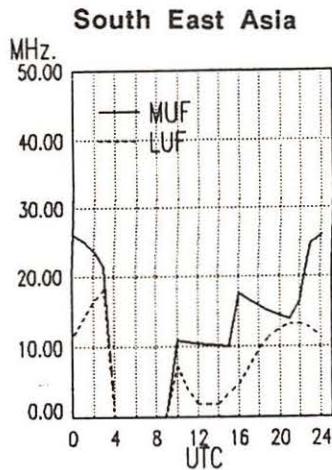
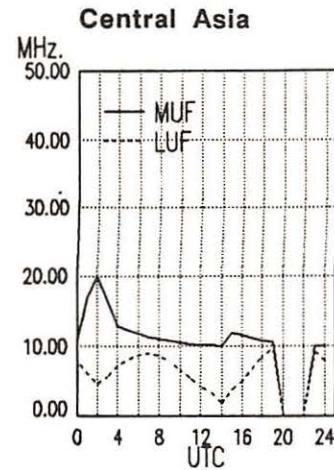
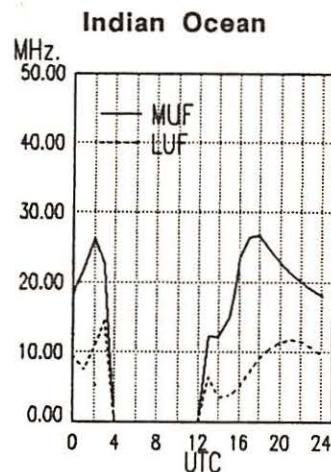
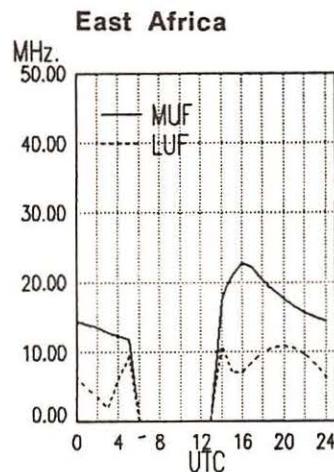
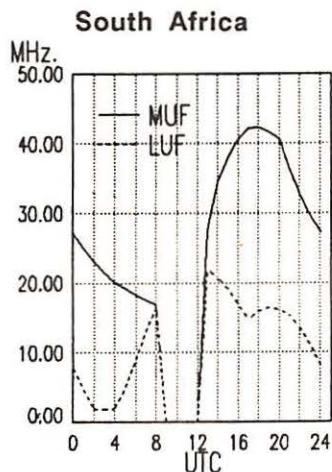
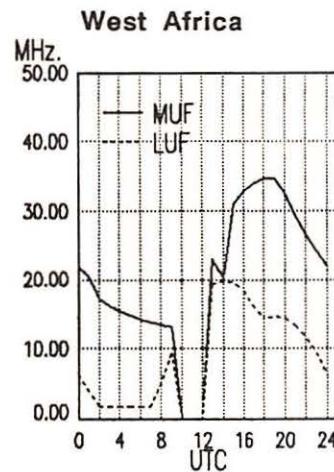
While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

Propagation conditions between the EAST COAST and ...



Propagation conditions between the EAST COAST and ...**Propagation conditions between the MIDWEST and ...**

Propagation conditions between the MIDWEST and ...**Propagation conditions between the WEST COAST and ...**

Propagation conditions between the WEST COAST and ...

Haverhill's Rodelvox Digital Portable

Several months ago, we broke the news about the DAK MR-101, a new Chinese-made portable with digital frequency readout selling for a mere \$49.90. In a nutshell, it has loads of features for the money, but mediocre overall performance and quality control.

Yet, fifty bucks is fifty bucks, and the DAK model has sold by the boatload. Reportedly, many have also been returned because of performance and quality-control flaws.

Set Widely Advertised

What seems to be that basic set, with numerous changes and improvements added, has surfaced as the Chinese-made "Rodelvox," sold by Haverhills (800/882-3050), the catalog firm that's been selling multi-band radios for some years, now.

Probably nowhere else has Haverhills been so thoroughly roasted over the coals than in our Buyer's Guide in *Passport to World Band Radio*. Yet, something has to be said in favor of a firm which has consistently and profitably beaten the bushes for world band customers. This can-do attitude is a far cry from the behavior of some world band manufacturers' marketing forces, which appear to be asleep.

Rodelvox Noticeably Different from DAK Model

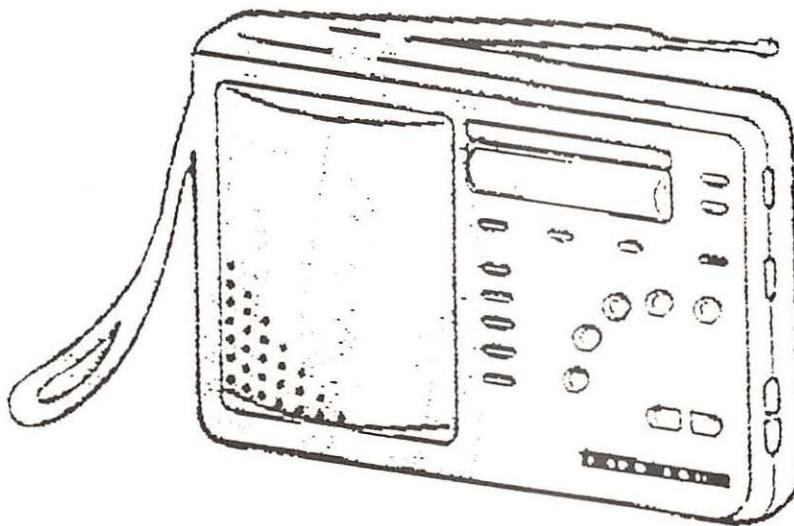
Now, Haverhills has finally come up with a worthwhile product for all those marketing energies. The Rodelvox, which Haverhills' computer printout refers to as the "Rodelsonic Dig. World Band," right off looks dissimilar to DAK's MR-101. The cabinet is designed a bit differently, for one, and its ergonomics are superior. The Rodelvox' antenna rotates, while that of the DAK unit doesn't, and the Rodelvox takes three, rather than the DAK's four, "AA" batteries -- and they're much easier to insert.

None of this is going to move the heavens, but the differences (and these are just the highlights) are real enough to make one wonder whether the two sets are made by the same Chinese factory.

Tuning Limitations in All Bands

The Rodelvox, like the DAK, tunes the AM band from 530-1630 kHz in 10 kHz increments. Of course, this means the 1640-1700 kHz portion of the forthcoming expanded AM band in the Americas won't be covered. Too, 10 kHz increments are fine for the Americas, but are inappropriate for most of the rest of the world, where 9 kHz increments are used.

Equally, the FM band, which is tuned in 200 kHz increments, is not appropriate to the channel separations found in most countries outside the Western Hemisphere. However,



the Rodelvox, which otherwise has only pedestrian overall FM performance, does allow for stereo FM reception when headphones are used.

In all, then, the Rodelvox, like the DAK, is far from the ideal set for globetrotting.

There's no longwave coverage -- another drawback for listening abroad -- but shortwave coverage is reasonable, if not ideal. "SW1" covers from 3200-7300 kHz, while "SW2" snare 9500-21750 kHz -- all in 5 kHz, or one-channel, steps. Missed are the 7.3-7.6, 9.3-9.5 and 21.75-21.85 MHz portions of the spectrum. A peek at the Blue Pages of the 1991 *Passport* shows that large numbers of juicy stations, some not available on other channels, are found within these not-covered frequency ranges.

That's the same dismal shortwave coverage found on several other sets that have recently begun coming out of China and Taiwan. This goes to show that as radios become increasingly dependent on a small number of chip designs for key circuits, it becomes more essential that engineers of those chips be thoroughly informed as to the real-life requirements of the end products. The flawed coverage of this popular Asian chip/LCD design shows how one set of lousy specifications can result in the screwup of all sorts of models from any number of manufacturers.

Tuning, as with the DAK and other units using this same basic chip design, is Spartan. There's no tuning knob -- no keypad, either. Just a pair of up-down slewing buttons, and five buttons for programmable channel memories. As these memory buttons, which are spread in an arc, as in a quarter moon, work independently for each of the four "bands," there are actually 20 memories in all: five for AM, five for FM, five for "SW1" and five for

"SW2."

Another plus is that the slewing buttons are multi-speed. So, while they're a mediocre substitute for a keypad and tuning knob, once you get the hang of them they are adequate. Indeed, for the first-time listener they have the advantage of being extremely simple to operate.

Nonstandard Display of Frequency and Time

The Rodelvox' clock/frequency LCD, which is lit for nighttime use, has superior contrast and reasonably large numbers. On the other hand, instead of displaying frequency in the customary XXXXX kHz frequency layout, it reads as XX.XXx MHz. For frequencies ending in "5", that's fine. But the last digit is dropped when it's a zero. So, say, 5965 kHz displays as 5.965 MHz, but 5960 kHz comes out as 5.96 MHz. You get used to it, but it's yet another indication, like the 7.3-9.5 MHz tuning gap, that whoever designed the tuning chip/LCD has had pitifully little experience in the field.

Having a clock with timing facilities on a world band radio is also a great idea. You can use the clock to ascertain World Time (UTC), and as a timer it can allow for at least some VCR-type hands-off taping.

Problem is, the Rodelvox's clock (that chip/LCD circuit again!) uses the 12-hour format -- not the 24-hour format required for World Time. And its timer is a simple on-only alarm. That's fine for being aroused in the morning, but it's of little use for taping. There's also a sleep-off control.

On the Rodelvox, as in the DAK unit, there's a lock switch for the keypad. Frankly, this looks

as though somebody designing the receiver saw "lock" on several other portable radios and decided that meant a keypad lock. What it normally means -- and should mean -- is a power lock, which prevents the radio or its dial light from coming on accidentally in transit, running down the batteries. So while the Rodelvox lock misses the point, at least it's clearly and honestly labeled as a keypad lock.

Sensitivity Much Better than DAK Model

As to performance, it's a mixed bag. Selectivity is fairly typical for a \$100 model -- you can hear squeals and slop from adjacent channels, but it's not all that obnoxious. Audio quality, while it's a bit tinny, isn't too bad, either.

The real difference in performance between the Rodelvox and the DAK units, however, is in sensitivity to weak signals. The DAK sometimes seems to be better at generating hiss than in bringing in stations. The Rodelvox, however, fares much better, notably in the lower frequencies covered by "SW1."

However, the Rodelvox shares one annoying shortcoming with the DAK: single-conversion IF circuitry. That is hardly surprising for a receiver in this set's price class, but it means that you hear some "repeats" of radio signals that actually operate almost 1 MHz away.

Reliability Questionable

The only way to be certain of a given model's reliability is to use numerous samples over long periods of time. As the Rodelvox has just made its debut, we haven't been able to do that. But looking it over doesn't inspire confidence. Nor does the fact that our sample arrived with a wrinkled antenna, and another sample's microprocessor began "hanging up" periodically after a couple week's use. The standard of construction of world band radios from China thus far appears to be a solid notch or two below most of those made in Japan and Taiwan.

Price? We paid \$79.95 plus \$6.95 shipping for ours when it was first being offered a few weeks ago, but that same model is now \$99.95 plus s/h, or \$106.90 total. That's only \$12.95 less than Radio Shack's similar, but much better constructed, Realistic DX-370. And close to the street price for two models very much like the DX-370: the Magnavox (Philips) AE 3805 and the Sangean ATS 800, both widely sold by world band specialty firms and other stores.

Bottom Line: What's the Point?

So, what all this come down to is that, yes, the Rodelvox is a welcomed improvement over DAK's pioneering but flawed MR-101, and Haverhills is to be commended for seeing to it that improvements were made. But the Rodelvox lacks the appeal of rock-bottom price found in the DAK model, which costs only half as much; yet, it doesn't have the quality of construction of a variety of similar models within its price class.

The problem with this close family of portables from Sangean, Magnavox, Philips, Radio Shack, DAK, and now Haverhills, is that while they are essentially suitable only for traveling (their performance is below that needed for hour-after-hour listening at home), the fixed channel spacing of their AM and FM circuits, plus the lack of longwave coverage, make them singularly inappropriate for use abroad. If these sets can't hack it as world travel portables, and they won't suffice for use at home, then what are they being produced for?

Someone has come up with a nifty way to produce decent radios for much less money than in the past. That's great. But much more thinking needs to be done about designing sets to fit real-life market requirements and listener needs.

You can hear Larry Magne's equipment reviews the first and third Saturdays of each month over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 7:35 PM ET on 5960, 9755 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855, 17820 kHz.

PASSPORT's "RDI White Paper" equipment reports contain its exhaustive tests. These equipment reports are available in the U.S. from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland, and Lowe Electronics stores; in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list, send an SASE to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

Sophisticated Monitoring

UNIVERSAL M-7000



If you are monitoring only *voice* shortwave stations, you are missing half the action! Thousands of shortwave stations transmit in non-*voice* modes such as Morse code, various forms of radioteletype and FAX. The Universal M-7000 will permit you to easily intercept and decode these transmissions. This is the most sophisticated surveillance decoder available. No computer is required. See the world of shortwave excitement you have been missing.

UNIVERSAL M-900

For those desiring to copy the basic modes (Morse code, Baudot, SITOR A/B and FAX), we suggest the affordable M-900. From \$499.95

Huge Communications Catalog

The new Universal 92 page communications catalog covers everything that is new for the amateur, shortwave listener and scanner enthusiast. Equipment, antennas, books and accessories are all shown with prices. Available for \$1 postpaid.

Universal Radio
1280 Aida Dr. Dept. MT
Reynoldsburg, OH 43068
■ Toll Free: 800 431-3939
■ In Ohio: 614 866-4267

Universal has been serving radio enthusiasts since 1942. Visit our large showroom east of Columbus, Ohio.

Computer Aided Scanning

a new dimension in communications from Datametrics



Now you can enhance your ICOM communications receiver through a powerful computer controlled system by Datametrics, the leader in Computer Aided Scanning.

The system is as significant as the digital scanner was five years ago and is changing the way people think about radio communications.

The Datametrics Communications Manager provides computer control over step by step instructions, screen displays, and reference information.

Powerful menu driven software includes full monitoring display, digital spectrum analyzer and system editor.

Innovative hardware design requires no internal connections.

Extends ICOM capabilities including autolog recording facilities, 1000 channel capacity per file, and much more.

Overcomes ICOM limitations such as ineffective scan delay.

Datametrics, Inc

— R7000 system \$349
— R71A system \$349
— Manual and demo disk \$15

Requires ICOM receiver and IBM PC with 512K and serial port. The R71A version also requires an ICOM UX-14.

Send check or money order to Datametrics, Inc., 2575 South Bayshore Dr, Suite 8A, Coconut Grove, FL 33133. 30 day return privileges apply.

UNIDEN'S NEW BC855XLT

Released in limited quantities at the close of 1990, the new Bearcat BC855XLT from uniden is a low-profile, entry-level, desktop scanner with 50 memory channels. Pre-programmed weather search for the five NOAA frequencies is provided as well.

The 50 memory channels are divided among five 10-channel banks which may be combined or locked out in any combination. Frequencies may be scanned or searched at 5 or 15 steps per second.

Frequency coverage for the new Bearcat includes 29-54, 118-174, 406-512 and 806-956 MHz (cellular ranges deleted, but restorable as described in the sidebar).

Individual channel lockout permits any memory channel to be temporarily deleted during the scan sequence to avoid stopping on unwanted frequencies without erasing them from memory.

The liquid crystal display shows frequencies and operational settings. Rescan delay is selectable for individual channels to allow a two-second wait for responses between transmissions.

Squelch may be manually set for desired sensitivity, or rotated to the automatic position which is factory set for optimum squelch level for most applications.

Uniden's standard search capability allows the user to enter his own upper and lower frequency limits and the scanner will automatically tune rapidly across that range looking for active signals.

Channel one priority allows any frequency in the radio's range to be entered into this channel and sampled every two seconds for activity, automatically locking onto that channel when a signal is present so that the listener won't miss an important message even though the radio may be scanning or searching.

A non-volatile memory provides long-term storage of memorized frequencies without the need of a replaceable battery. Direct channel access permits the user to press keypad digits to instantly monitor the corresponding channel number.



CELLULAR RESTORATION

NOTICE: Monitoring Times assumes no responsibility for damages or other liability resulting from attempting to duplicate this procedure. It is possible that this modification may void your warranty.

While it is lawful for anyone to own a receiver with cellular frequency coverage, it is not lawful to monitor cellular telephone calls.

The following steps should not be attempted by anyone unfamiliar with electronic circuit components. Tools required are a Phillips screwdriver, wire cutters, 1/4 or 1/2 watt resistor measuring 4.7k to 22k ohms, a small soldering pencil and small gauge, rosin core solder.

With the power cord disconnected and the bottom edge of the scanner facing you, turn it over on a soft surface to avoid scratching, and proceed as follows:

1. Remove the five Phillips-head cabinet screws and carefully separate the cabinet.

2. Grasping the speaker plug (not the wires), carefully pull the plug from its socket. Lay the two cabinet halves side-by-side.

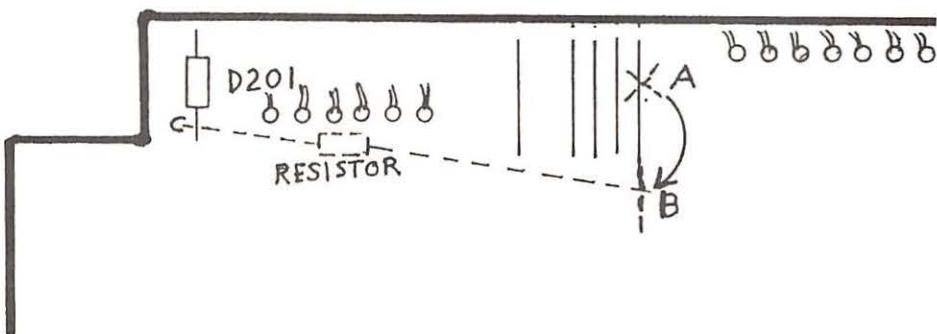
3. Refer to the illustration and find the fifth jumper in a row at the top of the right-

hand circuit board. Cut "A" at its midpoint and bend it down as shown.

4. Route the resistor under the lower lead of diode D201 and under the jumper lead. Solder points B and C carefully; do not use excessive heat. If the jumper comes loose from beneath the board, it will reattach when the solder cools.

To test the modification, plug in the power cord, switch on the scanner and press MANUAL, 845., ENTER in that order. If 845.000 appears in the display, the restoration is successful, otherwise ERROR will be displayed as before. Remember, the speaker is disconnected, so no audio will be heard.

5. Snip off and remove excess wire from the resistor leads; plug the speaker lead back in place; reassemble the cabinet. If factory service is required, the resistor may be removed and the jumper lead resoldered.



The antenna jack is the improved BNC variety; an 18" plug-in telescopic whip is provided for close-in listening convenience. An 1/8" external speaker jack is included on the rear apron, as is a 12 volt DC jack for the AC wall adaptor (provided). If mobile operation is desired, the unit may be powered directly from a cigarette lighter adaptor like the popular Grove ACC23 (\$9.95 plus shipping).

Audio output level is 1.3 watts, substantial for indoor listening environments. Size is 9" W x 6-1/2" D x 2-1/4" H and weight is 22 ounces. The housing is a smooth, metallic, grey plastic cabinet.

A Look Inside

Essentially, the BC855XLT is a desktop version of the enormously-popular BC200XLT handheld scanner. As such, it has excellent sensitivity and average selectivity and dynamic range. But it is an outstanding value considering it is the lowest priced scanner on the market with 800 MHz capability.

Our Observations

Unlike the venerable BC800XLT with which this new unit will clearly compete, the BC855XLT has only one antenna connector, but cellular frequency coverage (included from the factory on the 800) is deleted (although it may be restored).

The audio amplifier provides strong, clean audio, more than adequate for any common listening environment.

Like the BC200XLT handheld, the 855 will respond to the all-channel erase command (with the radio off, hold down MANUAL, 2 and 9 and switch on the radio) and the factory preset frequency autoload as well (same as above, but pressing SCAN, 2 and 9).

The liquid crystal display (LCD) shows frequency, channel number, bank number, scan or search mode, and lockout or delay status on selected channels. The easy-to-read, 1/4" digits are backlit by a green electroluminescent (EL) panel for night viewing.

The BC855XLT is now available from Uniden dealers; Grove Enterprises, from whom we borrowed this unit for testing, sells them for \$209 plus \$5 UPS shipping.



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The \$69 Macintosh program that gives you more than just frequencies. Navigator offers graphics and sound, program information (including DX/Media programs), reports, searching and sorting, logging, buttons and macros, and simplicity of use. *WRTH Most Innovative Software 1988*. Now, with HyperCard 2.0, enjoy multiple windows, etc. If you use any Kenwood TS Series equipment or the R-5000, get the computer control version for \$99 (includes Copilot/Autopilot).

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A Macintosh-only computer control program which displays 3 frequencies simultaneously — both VFOs and the memory channel. Imports/exports from your own databases. Buttons permit easy scanning (forward and reverse). The sweep function will sweep thru preset bands in both the BC and Ham bands (user-definable limits). Smart enough to tell what Kenwood it is hooked up to and adjusts features accordingly. With Autopilot \$69 — with SW Navigator \$99.

Autopilot

Autopilot operates just like a VCR, switching between different frequencies and modes at preset times. When used with the Kenwood R-5000 it allows multiple timed recordings of broadcasts, turning the receiver on and off. When used with TS Series of Kenwoods, it can program your listening schedule. It functions in the background, thus freeing your Macintosh for other tasks while the timer continues to operate. With Copilot \$69 — with SW Navigator \$99.

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Thanks

to the thousands of you who returned the reader's surveys! We appreciate your loyalty, have noted your responses, and will report to you shortly!

INNOVATE and Cut the Cost of Parts

Are you a person who buys new materials each time you tackle a new project? For example, do you buy commercially-made antenna insulators for each antenna you erect? What about project boxes for those upcoming pieces of radio-room equipment?

If we were to compile a list of materials we have purchased for, say, the past 12 months and did a cost analysis, we might find the expenditure a bit shocking. Ordinary store items can be modified for electronics use at a significant savings if we are willing to be innovative. This article treats the general subject of employing common materials for day-to-day electronics applications.



I look at the supermarket shelves and in the kitchen cabinet with more than a passing interest; here is a wealth of useful gadgetry just waiting to be put to use.

Antenna materials

Quality insulators are costly. We can save money by using hardware-store materials. For example, PVC pipe and PVC pipe nipples (joiners) serve nicely as antenna insulators, and they cost just pennies for the 1/2 and 3/4 inch sizes. They work well for

receiving types of antennas, and they are suitable also for low-power transmitting antennas (less than 300 watts).

PVC material can break down and burn when it is used as insulating material at the high-impedance points in a transmitting antenna. I don't recommend it for use as dipole end insulators or loading-coil forms if high levels of RF power are used. PVC plastic is okay for high RF power if it is used at the low-impedance point in an antenna (center insulator of a half-wave dipole, etc.).

In a like manner, plastic hair-curler forms (rollers) are cheap and entirely satisfactory as antenna insulators. I have used them as spreaders for open-wire, balanced feed line. Plastic coat hangers may be cut into suitable lengths for use as insulators. One hanger provides many insulators, and you can cut it easily with a hacksaw.

Some of you may recall the way it was done a few decades ago, when we boiled wooden dowel rod in paraffin (canning wax) for 30 minutes after cutting and drilling it for use as insulators. The technique remains practical, and the wood stands up well in the weather for years. Wood may be treated in the same manner if we wish to construct a dipole center block.

This discussion brings to mind a ham radio field day event I attended where the crew forgot to bring insulators for the antennas. An innovative member of the group solved the problem by removing the polyethylene retainers from some soda-pop six-paks, separated the rings with a knife, then used them as insulators. They were strong and had excellent insulating properties.

Antenna wire has become an expensive item. I have found a workable solution to this problem by purchasing clear plastic twin speaker wire that is sold at most radio stores. The parallel wires pull apart easily to provide 200 feet of antenna wire per 100 foot roll. I prefer No. 22 speaker wire for short antennas and No. 18 speaker cable for longer, heavier antennas.

The cost per foot of antenna wire becomes two or three cents, and the plastic insulation enhances the strength of the wire.

The insulation holds up well when exposed to the elements for long periods.

It appears to be UV-resistant as well. I have used this wire for as long as four years in Michigan, and found no evidence of discoloration (suggesting contamination) or cracking. The plastic jacket helps prevent oxidation of the copper wire inside it.

I have used speaker wire (unseparated) as low-impedance balanced feed line when operating my ham gear in the West Indies. It is resistant to salt water and is lightweight, which makes it easy to carry in my luggage. You can make a dipole from speaker wire by simply pulling the two conductors apart to form the dipole, then tying a knot at the feed point and using the unseparated part of the wire as a balanced feed line. A 40-meter dipole, thus constructed, should cost less than \$1.

No. 18 Copperweld electric fence wire is very inexpensive. It is worth considering for use in a variety of shortwave and ham antennas. Most farm supply stores sell it in 1/4-mile spools for as little as \$12. It is an inexpensive source of wire for buried ground radials as well.

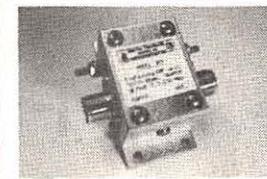
Workshop materials

Sheet aluminum is sometimes hard to find, and it can be costly. Those of us who like to make our own chassis and panels can take advantage of aluminum cookie sheets that are sold at most variety stores. They are relatively inexpensive and may be cut easily with a saber saw.

I have used galvanized steel furnace ducting to form many chassis and boxes for my projects. Some heating contractors are willing to give me scrap pieces at no charge. I like using this material because the seams of a box can be soldered together easily with a 100-watt or greater iron. Once cleaned and painted, my homemade boxes look as good as most store-bought aluminum project boxes.

Plastic and metal recipe boxes are excellent for use as small equipment enclosures, and they are inexpensive. Other types of office file cabinets (such as bond boxes) serve as inexpensive cabinets for

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Hardware	18-8 stainless hardware
Finish	8-32 stainless steel ground lug, 1/8" thick 5032-H32 case, 5-32 mounting hardware
DC resistance across	Natural aluminum
Capacitive effects	1.7PF, 100PF, 1000PF, resistive
GDU specs.	Less than 1pf
Environmental	Meets REA PE-60 IEEE 587 CCITT K12 Recommendations for Indoor service, Input bushing to station's grounding system. May be used outdoors if protected from direct rain exposure.
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larger pieces of gear. Ventilator grilles and screen vent plugs are sold at most lumber supply houses. They are excellent for use as ventilator openings in cabinets that house heat-generating electronic circuits.

Don't overlook aluminum channel and angle stock as heat-sink material. Lumber suppliers carry all manner of aluminum stock that may be cut to size and used for semiconductor heat sinks. Aluminum angle stock is great also for joining the walls of homemade cabinets.

Small diameter hookup wire for little projects is hard to find in electronics catalogs. An excellent source of this type of wire is multiconductor telephone cable. Each wire in this cable has its own color code. A two-foot length of this cable has provided sufficient wire for my many projects over the past 10 years. A telephone serviceman gave me two scrap pieces of cable for my shop. Don't be bashful about asking for leftover cable that is usually thrown in the trash pile.

Homemade circuit boards can be fashioned from scrap pieces of Formica by using epoxy glue to affix thin copper to the Formica. Hobby stores stock very thin copper for this application. Alternatively, you may use the thicker flashing copper by cutting it into strips of the appropriate length and gluing it to Formica or a similar insulating material.

How about coil forms for small equipment? The days of commercially made plug-in coil forms are gone. I have used two and three circuit PL-55 type phone plugs as plug-in coil forms. The coil is wound on the plastic screw-on sleeve, then glued to provide a protective insulation for the coil wire. I use polyurethane varnish for this purpose. General Cement polystyrene Q-Dope is better, but it is expensive, comparatively speaking.

I have used discharged shotgun shells successfully as coil forms. The plastic bodies of the shells have good insulating properties and the material is rigid and moisture proof. I mount the shells on a chassis by means of a 4-40 screw and nut which is passed through the primer-cap hole. The cap is removed easily by using a punch and hammer to dislodge it. Prescription pill bottles also serve well as coil forms. Your friendly druggist will probably sell you a few of these at his cost.

Some closing thoughts

I have barely agitated the surface in this discussion. There are countless common items you can obtain for use as substitutes when cutting the cost of commercial radio parts. All it takes on your part is to have an inquisitive mind when you browse through the variety store or lumber supply house.

I look at food containers with more than casual interest when I'm at the supermarket. Many cans are ideal for use as small chassis or shield cans for sensitive circuits. I give more than a cursory examination to baking pans and other aluminum cookware items. Cake tins and bread pans are great for use as chassis -- especially for prototyping new circuits.



Lettin' the Air Flow

Want to cool off your Uniden BC 250 (or any other scanner/receiver for that matter)? If so, read on. By removing the bottom cover of the BC250 scanner (which is made of heavy gauge sheet metal) and opening up one or two holes with a nibbling tool, you can increase the air circulating throughout the radio.

Radio Shack sells some small speaker grills (RS # 40-1291) which can be placed over the holes in the bottom cover to keep hands from accidentally finding some possibly lethal voltages. Ensure that the holes conform to the size of the grills.

If desired you can pop the top cover and repeat the process to provide excellent air flow through the radio. Just be sure that the grills fit the holes and secure them with some five minute epoxy cement so they won't pop lose. Thanks to Robert Watkins of Milwaukee, Wisconsin, for the information.

A Different Tilt

Some monitors like to put a tilt on their equipment. I have seen everything from blocks of wood to 35 mm plastic film cases placed under the front of a radio to elevate the unit. The film can solution gives about 2 inches of lift to the front.

I prefer the plastic caps off the LARGE toothpaste tubes which yield about a 3/4 inch tilt. These plastic caps can be painted to match the front panel. They are secured with a screw through a hole drilled in the top of the cap directly to the bottom of the receiver cabinet. Radio Shack sells a selection of stick-on feet (I use the clear round ones) which can be attached to the open end of the toothpaste cap to provide a nonskid foot for your favorite radio.

Locked out of the Trunk?

More and more public services are leaving the traditional Hi-band VHF and UHF frequencies in favor of the new 800 MHz trunked systems. This provides a real challenge to scanner listeners, for how, outside of spending lots of money for a new scanner which covers 800 MHz, do you receive these frequencies?

Some enterprising individuals have experimented with their scanners using them as tunable IF strips and punching in

ridiculous combinations of frequencies in hopes of hitting a multiple of the fundamental frequency plus or minus the IF frequency which will yield a usable 800 MHz signal. All kidding aside, this is not the way I want to spend my valuable time at the radio.

Bob Sickels of Ft. Pierce, Florida, came up with a very low cost solution to the problem. It seems that Fair Radio Sales, 1016 E. Eureka, Box 1105, Lima, Ohio 45802, might have a cost-effective answer. They offer a GE varactor UHF TV tuner for about \$6 each. Bob's interest in radio astronomy prompted him to hook up this tuner per the diagram in Figure 1. Tuning his receiver to 45 MHz and using it as a tunable IF strip, he was able to receive all the UHF TV channels and the 800 MHz portion of the spectrum, as well.

The hook-up bears a little explanation. Since the tuner is a varactor device, actual frequency shifting is done by a 100K ohm pot hooked up to a +24 to 30 VDC source. In addition, you need to supply two additional voltages of +15 V and +6 V. Input to the tuner is 300 ohms (as usual on TV sets) and

can be brought down to an impedance of 75 ohms using any balun designed for cable TV service.

The antenna is hooked onto the coaxial connector of the balun and the 300 ohm twin lead output of the balun is soldered to the two lugs for antenna input to the tuner. A short piece of coax with an RCA plug on one end and an end to match whatever your scanner takes for an RF input completes the hook-up.

Now, by tuning your scanner to 45 MHz it becomes an IF amp and audio section for the UHF tuner. Anything that the tuner hears is down converted to 45 MHz and fed to the scanner where it is demodulated and amplified.

So there you have it, a \$6 solution to the 800 MHz dilemma. Have fun with this one. The only limitation will probably be your antenna system. Bob uses a 7-foot dish and a GaAsFET preamp to boost his UHF signals, but if there is a lot of 800 MHz activity in your locale, a good UHF scanner antenna should provide some interesting listening. Many thanks, Bob.

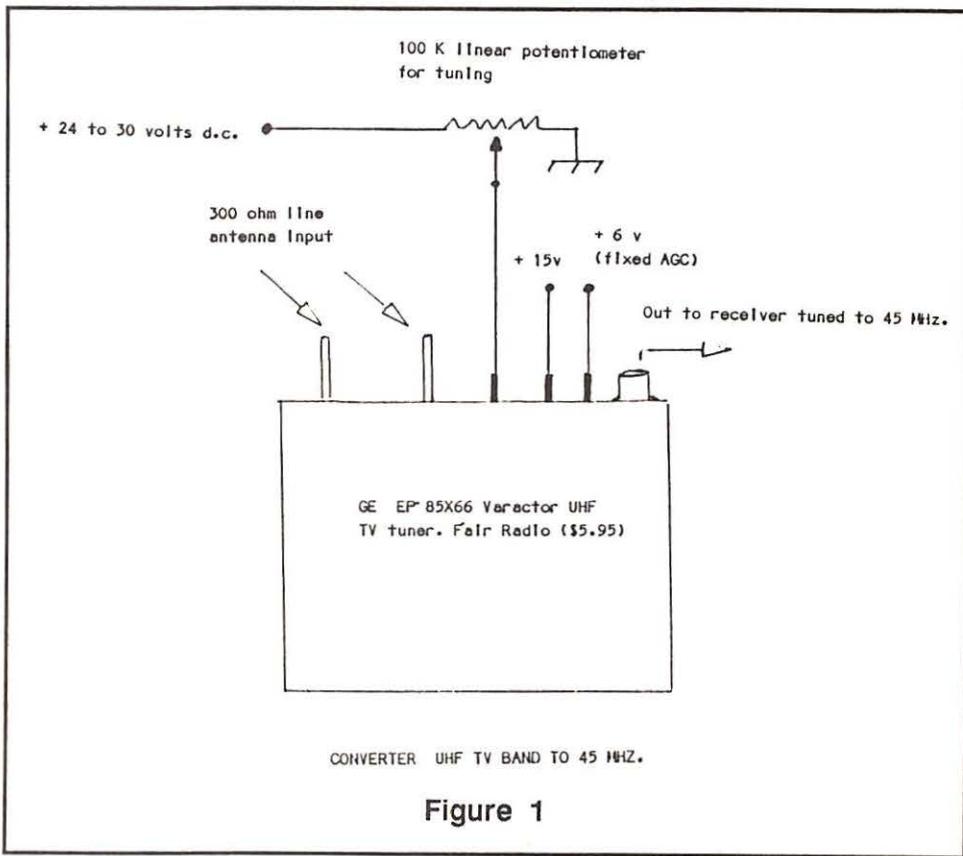


Figure 1

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, c/o MT, P.O. Box 98, Brasstown, NC 28902

Toward a More Selective IF

IF selectivity is a big problem with a lot of the portable shortwave receivers on the market. The Sony 2001, which started the portable shortwave revolution, was absolutely horrible on SSB and AM with its extremely wide ceramic IF filters. Radio West, EEB and Universal all offer mods to increase the selectivity of various portables by replacing the offending IF filter with one that exhibits better shape factor and skirt selectivity.

Unfortunately, this type of modification can be costly. About the only other solution is to add some sort of audio filtration on the output. This will clean up some signals but is similar in concept to a doctor who treats the symptoms rather than the cause of the disease.

Steve Raycraft of Watertown, New York, has had huge success by replacing the narrow filter in his Sony 2010 with a Murata CFM455J1/LF-C2A ceramic filter. These filters have a response of 2.6 kHz at 6 dB to 4.1 kHz at 50 dB, yielding a shape factor of 1.57:1, which ain't too bad at all. As with any of the mods described in this column, ensure that you have the necessary test equipment, experience level and, most importantly, the service manual or tech literature available so the mod will go smoothly and you won't hose up an otherwise good radio.

About the only problem is procuring the Murata filters. Most parts outlets do not stock them and those that do usually have a minimum order amount. Anyone out there know of an inexpensive source of Murata filters?

Packing for an Expedition

In the August column I put forth several ideas for making a listening DXpedition a little more tolerable. Bob Fraser of Cohasset, Massachusetts, provides further info on this topic. Bob deploys into the bush with a Sony

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2003 (predecessor of my 7600) in a fanny pack. Also included in the pack is a zip-lock baggie holding a notebook, pencil (I prefer a .5mm mechanical type made by Pentel) and several frequency lists reduced photostatically to a small size.

In addition there is another zip-lock bag holding a set of folding headphones (I use the mono, nonfolding headphones found in Radio Shack) and the AN-61 reel antenna (I really like the reel antenna idea -- the British SAS have used this design for over 40 years in their portable HF sets).

Bob also chides me for not mentioning a small mini flashlight. It just slipped my mind, Bob. I have two sizes, one which stays on my belt in a pouch and the other one in my shirt pocket or in the radio gear.

Bob brings up a good question regarding heat/cold damage to portable receivers and scanners left for extended time in a vehicle. I use a trick carried over from my photographic days, using a large styrofoam cooler (usually about \$3 or \$4 at a local supermarket) to keep the equipment at an even temperature while stored in the car or van.

You don't have to use any ice bags or frozen "blue-goo" in the bottom unless temperatures are extremely intense. If ice or coolant is used, be sure to seal the radio equipment in a zip-lock baggie and place a towel or piece of cardboard down over the ice to ensure that water or condensation does not ruin delicate electronic equipment.

Fatal Flaw in Dec Circuit

Finally, Lt. Arnal Cook, an advanced ham who currently resides aboard the USS Nimitz, has a warning for anyone trying the circuit on figure 4 of the December issue (p. 95). The circuit, says Arnal, is "guaranteed disaster if anyone tries to install it in any non-center tapped transformer circuit as you show." Figure 5 shows how to hook it up in a PRO 2004/5/6 scanner. "The least it will do is blow fuses. At worst, it could wipe out a \$400 scanner instantly." We'll let Arnal explain.

"These figures attempt to show how to provide a split (or dual) polarity power supply for an IC circuit requiring + and - 12v. Paralleling two bridge rectifiers and strapping an output of each together (the traditional [-] of one to ground and the [+] of the new one [Fig. 4] to ground) results in a direct short through two forward biased diodes of the non-center tapped transformer.

"You cannot simply parallel another simple full wave (bridge) rectifier across the same winding and miraculously double the output voltage (+ and - 12v = 24v!)."

That's it for another month, gang. My sincere thanks to all who have written sending in solutions, mods and questions. This column cannot function without your input and support. 73 es gd DX.

mt

Of Sailboat Masts and Paper Clips and Cabbages and Kings

Yes, this month we have reports on antennas which utilize, of all things, sailboat masts and, it's true, paper clips. But I must admit, I lied about the cabbages and kings. Anyhow, now and then I feature something that one of you talented *Monitoring Times* readers sends in to share with me. This month we have not one, but two reader-designed antennas which we will take a look at.

A Multiband Shortwave Antenna System:

Our first antenna comes from *MT* reader Jacques d'Avignon, who monitors the airwaves from Cornwall, Ontario, in Canada. Here are the steps to the Avignon Antenna System shown in Figure 1.

1. It seems that Jacques started the whole project off by putting the first antenna pole up to serve as one support for a clothesline which his wife wanted. No harm in getting your spouse favorably disposed to your antenna projects right from the start.
2. Then he strapped a 30 foot sailboat mast to his chimney. A less romantic solution for most of us might be a

Radio Shack telescoping pipe mast, or even one of the wooden masts mentioned several months back in this column (plans still available for a business-size SASE). To get the most of this installation, in addition to the antenna described below, Jacques mounted his VHF discone on the top of his tower.

3. Next he cut insulated wires to the following lengths: 45, 40, 35, 30, 25, 20, 17.5, 12.5 and 7.5 feet. Jacques tells us that these lengths approximate quarter wavelengths for most of the important monitoring bands from 5 to 30 MHz.
4. The insulated wires were then "bundled up together" and strung between the clothesline pole top and the sailboat mast as shown in Figure 1.
5. Ground the metal mast. If you use a wood or nonconductive mast, you could run a ground wire up the mast to provide the needed grounding. Probably number 12 or even heavier would be best here.
6. The feedline is RG-8, and its shield is grounded to the mast (or the ground wire) near where the antenna meets the

mast. Scrape the wires bright where they connect and make it a soldered connection if possible.

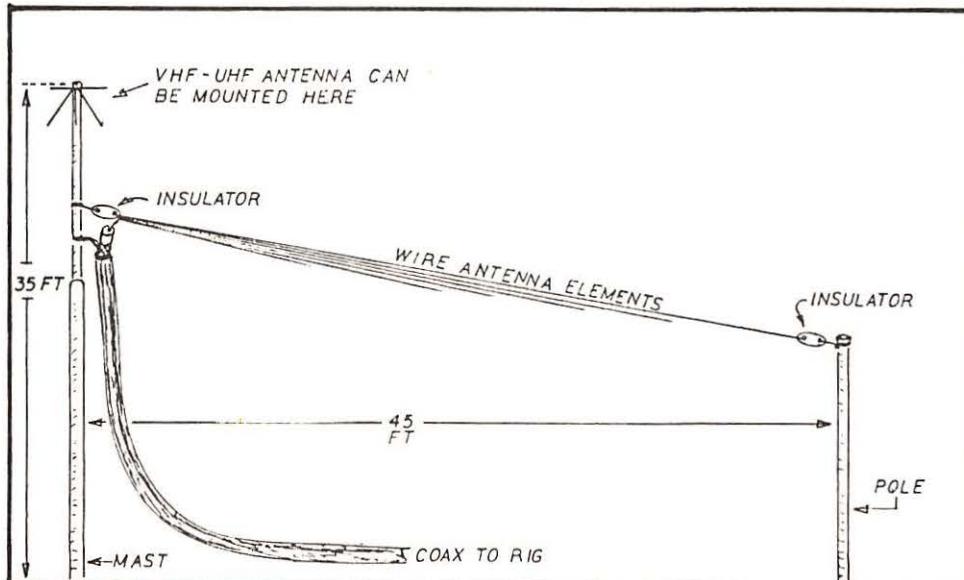
7. Use insulators at each end of the wire span between the two poles as shown in Figure 1.
8. The end of each antenna element wire nearest the mast is scraped clean of insulation and then they are all connected together and connected to the center conductor of the RG-8 feedline. For best results, this multiple connection should be soldered. Seal the connection around the coax with coax sealer to keep weather out of the line.
9. If you live in lightning country, be sure to remember at least the minimum lightning damage protection: never operate your rig in stormy weather, and always disconnect and ground your antenna when it is not in use. I unplug my rig too, as transients on power lines from nearby strikes can enter through that route.

Jacques reports that this antenna works very well for him, and it should do so for you, too, if you are a shortwave monitoring enthusiast. The old rule of putting it as high and in-the-clear as possible should be kept in mind, but if you can get it up only 20 feet or even less, you should still have some good monitoring and enjoyable evenings with the Avignon Antenna System. Thanks, Jacques.

Kurt N. Sturba,* Eat Your Heart Out

The next antenna came across my desk under the heading, "My most interesting antenna story." And you will soon see why. John Azzara, N2GYN, of Deer Park, New York, says that he "decided to have some fun on 10 meters" during a time when the propagation was really excellent.

He normally operates a three-element triband Yagi-Uda, but found contacts so



easy to make that he wanted more challenge in his radio-sport. So he used his ham transceiver and a MFJ 949 antenna tuner to feed a paperclip tuned as a longwire.

John reports that he was able to tune an acceptable SWR on this antenna with his tuner, and proceeded to call "CQ." To his great surprise, a G4 station (England) responded with a 5 by 8 report. When he signed off with the incredulous Briton, he immediately received a call from a DL (German) station who had been listening to his first "paperclip" QSO.

He continued to work stations with his "longwire paperclip antenna" and to each station he sent, along with his QSL card, the exact paperclip which he had used in the contact with that station.

John says he tells this story to encourage beginners and old timers alike that they do not need a beam antenna to work DX. You may remember my reference a few months back to the old McMurdo-Silver receiver ad which proudly reported "around the world reception with an ice-pick antenna," but this paperclip is the winner of the smallest practical (?) shortwave antenna I've heard of.

Thanks, John, you made my day. Any of you readers out there have a "most interesting antenna story" to beat John's?

RADIO RIDDLES

Last Month: We asked: "How could the beverage antenna earn such a reputation for really 'beaming-in' on the signal at which it is pointed, and bringing that signal up out of the interference to a nice listenable level when, in truth, the beverage antenna is a low-gain antenna."

Well, you can make a station stand out above the interference by either raising that station's strength above the interference, or by lowering the strength of the interference but not lowering the desired station's strength. The beverage is such a highly directional antenna that it is much less responsive to signals "off its beam" than to signals in its narrow beam path.

So, although it is a low-gain antenna, it tends to put the signal it is "aimed at" in the clear. Without the interference, that signal is much easier to read and therefore

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appears to be coming in stronger than it might on some less-directional high-gain antennas.

This month: Last month's featured antenna was named for its primary inventor, Harold Beverage. But its name sounds like it's something to drink. So, for next month, let's see if you can come up with names of actual antennas that sound like: something to eat, something to eat from, something to wear, something to sleep on, and something to keep a pet in.

Get the answers to those questions, and much more, in your next month's *Monitoring Times*. Till then, Peace, DX and 73.

* "Kurt N. Sturba" is the pseudonym of a well-known writer on antennas who has, for years, been encouraging radio enthusiasts to believe that you do not need an ideal antenna to have fun in radio. He has used such unusual items as a shopping cart and a lawn chair as antennas to work DX to demonstrate his point. And he's right, you know.

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Advertisers want to know!

Q. What frequency bands are used by U.S. aircraft in the Persian Gulf conflict? (Several readers)

A. One (of many) *MT* readers now stationed there informs us that his aircraft is capable of plain voice and cipher satellite communications (probably 240-270 MHz), plain voice and cipher 225-400 MHz, VHF-FM (probably 30-66 MHz), plain text VHF-AM (118-136 MHz), and plain text and cipher HF-SSB (2-30 MHz).

Q. What is meant by the term "bands" on radios? Is a ten-band radio better than a six-band radio? (John Madden, Greenville, SC)

A. A band is a swath of frequencies which share something in common. For example, the medium wave AM broadcast band consists of domestic commercial stations between 530 and 1600 kHz, while the FM broadcasters occupy the 88.1-107.9 MHz "band." The 80 meter ham band is 3.5-4.0 MHz; the civilian aircraft communications band is 118-137 MHz; and so on.

In early communications receivers, the number of bands was considered important for fine tuning as well as frequency coverage. For example, a radio that tuned from 530 kHz through 30 MHz in one band was far "touchier" to fine tune than one that covered it in four bands (four consecutive ranges). A rotary bandswitch selected those ranges.

Predictably, many less reputable merchandisers define their own bands to deceive

their customers. For example, some divide the domestic AM band into sports, music and news! How they ever arrived at that, I don't know, but they call such a receiver a "three-band" radio, even though it has only one tuning range.

When transistorized portable radios first came out, zealous oriental manufacturers took a similar misrepresentation to the extreme. I once saw a "16-transistor radio," ten of which were non-functional, merely soldered by their twisted leads to the circuit board! If anyone out there has one of these relics, I'd love to have it as a collector's item.

Q. Can a discone be used for TV reception? (A. Hogund, Thorndike, ME)

A. While the frequency coverage is that of TV stations, most TV signals are horizontally polarized; using a vertical antenna like a discone can reduce incoming signal strength by as much as 30 dB because of cross-polarization. Of course, if signals are strong enough, the loss is insignificant.

Q. How long is the shelf life of a new, uncharged NiCd battery? (Richard Sobon, Binghamton, NY 13901)

A. When a NiCd is purchased, it has already been charged, although the battery often has discharged by the time you purchase it. Typical lifetime for a NiCd is five years, by which time there is an obvious decrease in useful charge life.

Q. Why do I hear cellular telephones in the 454 MHz range on my BC800XLT? (Herb Robinson, Middletown, NY)

A. While you could conceivably be hearing intermod from close-by 800 MHz cell sites, it is more likely you are mistaking conventional 454 MHz mobile telephones from cellular telephones.

Q. Can a scanner be manufactured without a squelch? (Al Shack, Simi Valley, CA)

A. Sure, but why would you want to do it? All you would hear would be the raucous background hiss between transmissions. Perhaps you mean can a scanner be manufactured without a squelch control? The answer would be yes again, but the advantage of the control is to allow custom setting for your local signal levels and background noise.

Bearcat scanners often have an "automatic squelch" setting, fully counter-clockwise on the control. This allows the user to accept the factory's preset level without having to adjust the control. It is useful in areas of reasonably strong signals.

Q. Back in the days when CW (Morse code) was king, were there contests for speed, endurance, etc.? What were some of the records? (Gary Jordan, Laveen, AZ)

A. There sure were, and some of the kings were legend. Keep in mind, however, that many of the early records were restricted by the disadvantage of hand-operated straight keys.

More than a century ago at the Paris Exposition (1855), Jimmy Leonard, then only 15 years old, copied 4-character words sent by Joseph Fisher using a straight key at 55 words per minute. A respectable performance by both the receiver and sender!

But the receiving record to contend with is that set by professional Morse operator Ted R. McElroy at the Asheville, North Carolina, Code Tournament on July 2, 1939. At five characters to the word, McElroy copied 75.2 words per minute, earning him the Official Champion Radio Operator title which hasn't been broken for over half a century!

We would like to thank Bart Jahnke,

Bob's Tip of the Month:

FULL FREQUENCY COVERAGE ON THE D2999

In our December 1990 column, we admitted that we had no idea how to enable the remaining 4 megahertz of European versions of the Magnavox D2999 which stopped at 26 instead of 30 MHz. Scott Blessing of Newport News, Virginia, says he solved the problem.

The procedure, while straightforward, assumes electronic knowledge and should not be attempted by anyone unfamiliar with small electronic components. Be sure that proper grounding techniques are used to eliminate static which could destroy the delicate ICs.

Unplug the power cord and remove the batteries. Next, remove the seven 3x20 screws on the bottom and the six 3x10 screws on the top cover; carefully release the

covers, paying attention to the various wires still attached, revealing the chassis.

Locate the metal RF shield on the center right front of the main circuit board, underneath which you will find IC 7174, a 42-pin IC. From the notched end of the chip, count counter-clockwise to pin 38 which is soldered to ground, disabling the full coverage. Carefully snip this lead at its midpoint (so that it can be resoldered if necessary) to enable the full 30 MHz coverage.

We assume no responsibility for damage resulting from this modification which will probably void the radio's warranty. We would like to thank Scott Blessing for sharing his discovery with fellow hobbyists.

Questions or tips sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you desire a prompt, personal reply, mail your question along with a self-addressed, stamped envelope (no telephone calls, please) in care of MT.

KB9NM, of the American Radio Relay league (ARRL) for researching this information which was extracted from the publication, *Morse Code: The Essential Language* by L. Peter Caron.

Q. Am I permitted to intercept a TV program being distributed through the 2 GHz multipoint distribution system (MDS)? (Frank Lavoie, Hollywood, FL)

A. No. Interception for personal use of any "addressed" signal--one sent by subscription to specific users--is forbidden under provisions of Section 705 of the 1934 Communications Act and is considered theft of services.

Q. I recently heard on 27.405 MHz (CB ch. 40) at 1:30 in the morning a one-sided AM transmission in which the operator said it would be impossible to block his signal because of the satellite it transceives from. What was this? (Bill Czeto, Simcoe, ONT)

A. It was a CBer with an illegal linear amplifier puffing up his ego. There have never been any satellite downlinks in the CB band.

Q. How can I reduce interference radiated by the family TV set into my receiver? (Ken Hydeman, Kettering, OH)

A. The primary source of interference heard on shortwave radios comes from harmonics of the TV's horizontal (sweep) oscillator; these multiples of its 15.75 kHz frequency may be heard clear into the shortwave range as a raucous buzz.

Scanners get interference radiated by tuner oscillators (heard as unstable carriers) and intermediate frequency (IF) circuitry (audio sound and video buzz in the 42-45 MHz range).

Keep the TV and its antenna as far away from the radio antenna as possible. Add a high-pass filter to the TV antenna leads. Shield and ground the TV set (but not its chassis if it is "hot"--connected to one side of the AC line). Ground the radio. Try another TV. And most effective of all--turn off the TV!

Q. Where can I get a manual for my old Lafayette receiver? (Robert Hilton, Ft. Wayne, IN)

A. The best source of manuals for old communications equipment is HI Manuals, PO Box 802, Council Bluffs, IA 51502. Ask for the price of a manual for a specific model and include an SASE for a response.

Q. I bought a Radio Shack discone for my PRO-2006 scanner, mounted it in the attic of my aluminum-siding house, and attached the F-connector coax cable with adaptors, yet I see no improvement over my other antenna. How come? (Steve Demers, Coventry, RI)

A. All discones are great for wideband transmitting because of their

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constant impedance over at least an 8:1 frequency range, but they have no gain whatsoever over a simple ground plane antenna at any frequency. The Radio Shack discone degrades rapidly below about 100 MHz because it has no low-band resonator like the Diamond D-130 or ICOM AH7000.

There could be loss in your coax, especially if it is RG-58/U or low-grade RG-59/U; use RG-8U mini or RG6/U for low cost and high performance. Impedance is not a concern for scanner reception. Some adaptors are lossy; use coax with the correct connectors to begin with unless you know the adaptors are of high quality.

The PRO2006 has less sensitivity than most other scanners; this makes it more resistant to strong-signal overload in the city, but out in the country a better antenna and/or preamp may be indicated. Be sure the attenuator switch on the rear apron is in the "0 dB" position.

If the antenna is not at least 8 or ten feet above the uppermost level of aluminum siding, reflections and absorption may be hurting reception.

Q. Is there a way to get 100 or more channels of audio on a video tape, perhaps by multiplexing, like the article in MT a few years ago which told about how the government used pre-detection recording to store radio signals on tape? (William Hassard, Leduc, Alberta, Can)

A. Sure, but I haven't the foggiest notion how to do it! Perhaps one of our readers knows of such a scheme.

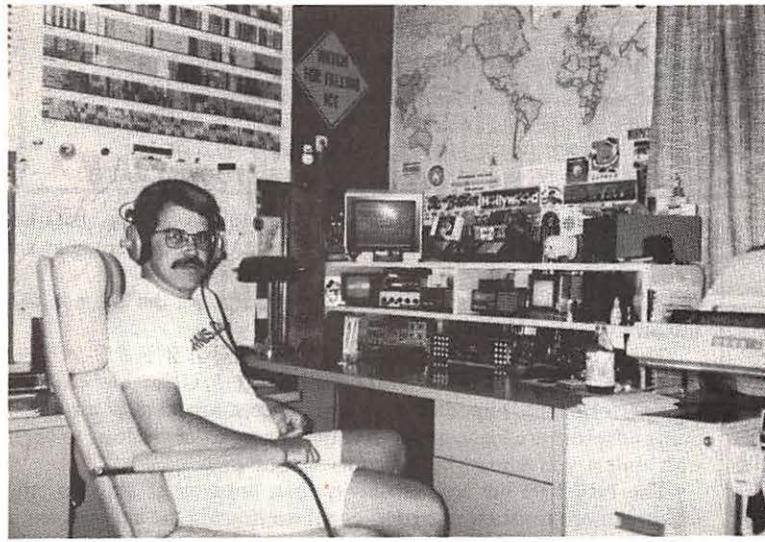
A comprehensive list of questions and answers regarding monitoring may be found in Bob Grove's "Scanner and Shortwave Answerbook," \$12.95 plus \$3 shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

LETTERS

continued from page 3

Broadcasting Yearbook and called Joe. He provided the explanation to a puzzled Arbitron.

A faithful contributor to *MT*'s pirate loggings, Pat Murphy, is also a news reporter for WNIS 850AM in Norfolk, Virginia. Pat credits *MT* and *PopCom* for revitalizing his love for radios. He says, "As a newsman I always had a scanner nearby but nothing that could search for stations. When I found you guys, I realized that I wasn't the only one that enjoyed these things. I've had fun building up the shack over the past few years. It's been fun to explore chunks of the spectrum that I had never listened to. Thanks to you, I stay off the streets and spend a lot of time in the company of some top-notch equipment."



He does, indeed. Pat sent us a snapshot of himself and his friends, which include a Kenwood R-5000, Universal M-7000 decoder, ICOM R-7000, PRO 2004, 5, and 6!

Once or twice a year, Pat persuades Bob Grove to do a radio show with him on WNIS, and says, "I get calls for weeks after, asking for your address." Thanks for the kind words, Pat, and for sharing your enthusiasm. It's readers like you that make "a great magazine, great columnists, and timely information!"

In the December issue, William Nichols mentions seeing a circle of 30 foot masts while vacationing in Germany. William was able to provide little other detail but was hopeful that another *MT* reader could explain what he saw.

We got a couple of explanations. First comes from Andy R. J. Cadier of Kent, England. "From the description given it

sounds very much like a low/medium frequency direction finding station," he says. "The higher frequencies are monitored using a vertical beam antenna with telescopic elements that can be extended or reduced at will, and can of course be rotated. How the ring of 30 ft masts work on the lower frequencies I do not know.

"By the way," concludes Mr. Cadier, "these facilities are usually found on high ground and are well way from other radio facilities and are run by the government."

Another source -- a gentleman who works for Motorola but who asked not to be identified, says that what Mr. Nichols saw is called a "Luneberg lens" and is used primarily for HF (shortwave) signal intercept purposes.

The Luneberg lens is based upon the principle of a horn or waveguide and is steerable for its 360 degrees with a 2 degree beamwidth. It can be used for transmitting as well," says this source.

In short, both roughly agree.

The fast food frequencies listed in last month's Scanning Report gave me a

chuckle," says Ken Greenberg of Skokie, Illinois. "Why, oh why," asks Ken, "would anybody, ever, listen to fast food employee conversations? I doubt if anything transmitted on the radio spectrum could be less interesting. Even repetitive beacon signals are more interesting."

I've got one that's worse: monitoring garage door openers. There is, of course, a club that's devoted to the topic, the Worldwide Garage Door Opener Monitoring Association (WWGDOMA). WWGDOMA publishes a monthly bulletin (twice during the winter time when the garage door opener frequencies are more active) called *GDMonitor*. You can get a sample copy of the January issue of *GDMonitor* -- which features a profile of the Sears "Security One" opener (both heavy duty and aluminum door models), an article on DXing garage door openers in

the Third World, as well as loggings by members and more. Send your check for \$59.95 to P.O. Box 1, Grand Central Station, New York, New York 10010.

Hey! Wait a minute!" says John Harazda of Denton, Texas. "Morse code is not a dying mode (See letter from Herbert Boose, "Ask Bob," December, pg. 98.) CW is alive and doing very well as far as I can tell. Read 'Looking for work?' on page 46 of the same issue. It looks like as time goes on Morse code is still the backup mode when the going gets tough, I personally regard CW as a necessary survival skill and think it should be taught as a second language in high school."

"I fail to see how Bob Kay's "Picking on the Ruskies" segment in his Scanning column pertains at all to communications. Perhaps the editorial page in Bob's local newspaper would be a better outlet for his personal political opinions than the pages of *Monitoring Times*." So says Greg Doerschler of Worcester, Massachusetts.

"I would like to add my sympathies to all the *MT* staff on the passing of 'Below 500 kHz' columnist Joe Woodlock," says Jeff Mutter of Charlotte, North Carolina. "I've enjoyed his column since it appeared in August 1988. Through his encouragement, tuning across the LF band has become part of my hobby routine."

"After the September, 1990, issue came out, I had some questions and information to share with Mr. Woodlock. Now, looking back, the fact that he wrote me back, despite his illness, underscores just how devoted he was to the hobby and *MT* readers."

We agree. There is, however, a sad footnote to Joe's passing. His column, which for the past few months has been written by *Monitoring Times* editor Larry Miller, will be discontinued after this issue. Not unexpectedly, we were unable to find anyone willing or able to fill Joe's shoes. In the future, information about longwave will be included in Larry Van Horn's *Utility World*.

We'd like to hear your comments, opinions, and experiences concerning the world of radio. Please understand that personal replies are not always possible.

Letters should be addressed to Letters to the Editor, Monitoring Times, P.O. Box 98, Brasstown, NC 28902. Please include your name and address (may be withheld at your request).

CONVENTION CALENDAR

Date	Location	Club/Contact Person	Date	Location	Description
Feb 2-3	Miami, FL	Southeastern Division Conv/ Evelyn Gauzens W4WYR	Mar 3	Dover, PA	Pen-Mar ARC, Keystone VHF Club, Hilltop Transmitting Soc, Southern PA Comm Group/ John Shaffer
Feb 3	Lorain, OH	2780 NW 3 St, Miami, FL 33125 Northern OH ARS/ Darlene Ohman KABVTS	Mar 9-10	Charlotte, NC	2596 Church Rd, York, PA 17404 Roanoke Div Conv/ W.Reed Whitten AB4W
Feb 9	Blaine, NH	4122 Bush Ave, Cleveland, OH 44109 Robbinsdale ARC/ Bob Arel KYOH			Location: Charlotte Merchandise Mart, 2500 E. Independence Blvd; \$6 preregistration or \$8 at the door; More info call 704-536-7373. Talk-in 145.29 MHz.
Feb 9	Goshen, NY	3042 Wisconsin Ave N, Crystal, NH 55427 Orange Co ARC/ Greg Kennedy KB2AUQ	Mar 10	Indianapolis, IN	Morgan Co Rpt Assoc/ Aileen Scales KC9YA
Feb 10	Mansfield, OH	Rd 3 Box 349 D, Wallkill, NY 12589 Intercity ARC/ Pat Harris N8EBK	Mar 15-17	Orlando, FL	3142 Market Place, Bloomington, IN 47403 Fla State Conv/ John Lenker W4DNU
Feb 17	Elkin, NC	449 Parker St, Mansfield, OH 44906 Briarpatch & Foothills ARC	Mar 16	Scottsdale, AZ	1046 Turner Rd, Winter Park, FL 32789 ARCA Spring Hamfest/ Allen Sklar AA7BJ
Feb 17	Kansas City, MO	Rt 1 Box 93B, Low Gap, NC 27024 Mid-America FM Assoc/ Robert Alkelsson			P.O.Box 10878, Scottsdale, AZ 85271-0878, 602-491-0802
Feb 16-17	Sarasota, FL	12109 E 51st St, Independence, MO 64055 Sarasota Area RA/ John Bates KC4ECA			Location: Scottsdale Community College, Pima and Chapparel Rd.; Admission \$2 per car. Talk-in 147.18/147.78 and ZIA Link.
Feb 23-24	Cincinnati, OH	5604 Antoinette St., Sarasota, FL 34232 Great Lakes Division Convention Contact: Stan Cohen WD8QDD, 2301 Royal Oak Ct., Cincinnati, OH 45237; 513-531-1011. Location: Cincinnati Gardens Exhibition Center, Langdon Farm Rd & Seymour Ave. 8:30am-5pm both days. Advance tickets \$6, \$8 at door.	Mar 16	Flemington, NJ	Cherryville Rptr Assoc/ Marty Grozinski KS2K
Feb 23	Orange, TX	Orange ARC/ Sherwood Buckalew KA5VOT P.O. Box 232, Orange, TX 77630; 409-883-6111 Location: VFW Hall, Hwy 87, 1 mi. N of IH10 Talk-in: 147.180 MHz; Free admission	Mar 17	Maumee, OH	6 Kirkbride Rd, Flemington, NJ 08822 Toledo Mobile RA/ Bernie Fine WD8C
Feb 23	Dalton, GA	Dalton ARC/ Harold Jones N4OTC P.O.Box 211, Rocky Face, GA 30740	Mar 17	Sterling, IL	11014 Obee Rd, Whitehouse, OH 43571 Sterling-Rock Falls ARS/ Susan Peters KA9GNR
Feb 23	Pensacola, FL	Pensacola Area Hamfest Assoc/ Richard Lloyd AA4W	Mar 16-17	Fl Walton Bch, FL	511 8th Ave, Sterling, IL 61081 Playground ARC/ Clair Fisher N4OWX
Feb 23	Charleston, SC	497 Ashley Rd, Contonment, FL 32533 Charleston ARC/ Glenn Little WB4UIV	Mar 23	Marietta, GA	616 Burgundy Ln, Fl Walton Bch, FL 32548 Kennehoochee ARC/ Jane Walls KB4QKX
Feb 24	Dearborn, MI	135 Rosedale Ave, Goose Creek, SC 29445 Livonia ARC/ Nell Coffin WA8GWL	Mar 24	Trenton, NJ	1097 Seven Springs Cir., Marietta, GA 30068 Delaware Valley RA/ Paul Collins N2JLP
Feb 24	Rock Island, IL	35681 Hees, Livonia, MI 48150 Davenport RAC/ David Johannsen WB0FBP	Mar 24	Madison, OH	118 Grant Ave, Hightstown, NJ 08520-4104 Lake County ARC/ Scott Farnham KO8O
		2131 Myrtle, Davenport, IA 52804	Mar 22-24	Kearney, NE	10418 Briar Hill, Kirtland, OH 44094 15835 Novara, Detroit, MI 48205 Midwest Div Conv/ Timothy Lowenstein WAOIVW
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Police Call Directory, 1990 edition (only some states); \$5.
Collection of previous editions of Confidential Frequency List,
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INDEX OF ADVERTISERS

ACE Communications	91
Advanced Electronic Technologies	23
Antennas West	3,29,48
Ashton ITC	41
C.Crane Company	91
Cellular Security Group	97
Classic Radio Service	23
Communications Electronics	9
CQ Communications	81
CSRA	97
Datametrics	89
DX Computing	91
DX Radio Supply	39
Electron Processing	53
Electronic Equipment Bank	15
11-Meter Communications	55
Franklin Video	55
Galaxy Electronics	13
GRE America	21
Grove Enterprises	83,101
GTI Electronics	51
Hollins Radio Data	35
Hunterdon Aero Publishers	45
ICOM America	Cover IV
ICUSA	95
Industrial Comm Engineers	93
Interbooks	3
J & J Enterprises	13
Just Tees'n	43
Klingenfuss Publications	33
MilSpec Communications	99
Monitoring Times	Cover III
NBO Distributing	93
OPTOelectronics	47
Palomar Engineering	47
Popular Electronics	57
Radio Shack	37
Software Systems Consulting	3,97
Somerset Engineering	5
Spec-Com	97
Startek	19
The W5YI Group	17,47
Tiare Publications	25
Universal SW Radio	89

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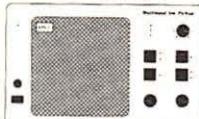
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Profits: The Bottom Line

Many listening hobbyists are suspicious that scanner and shortwave retailers enjoy windfall profits on their imported merchandise. After all, Japanese goods cost far less than comparable American products, right? Wrong!

While it is true that mass merchandisers steeply discount consumer items like TV sets, VCRs, stereos, computers, cameras and the like, our listening hobby is considered insignificant in comparison. Smaller numbers of buyers mean smaller numbers of products, and low volume means higher costs.

The Gallup Poll shows 98% of American homes have television, but only about 3% of the adult population have scanners and shortwave radios. Manufacturers place that figure at only about 1-2%, typically white males of middle age and older. The BBC expects to complete their own survey within a year.

In mass merchandising, a manufacturer's typical markup is 300-500%; sounds great, doesn't it? In the jewelry industry this is known as "keystoning"; you "keystone" every time you double your cost as a sales figure. Triple keystoning is common among jewelers.

Communications companies like Sony, Kenwood, Icom, Yaesu and JRC sell to dealers who sell to you ("two-stepping"); there is no distributor. This should save the dealer money, right? Wrong again! The pervasive presence of discount mail order firms who buy factory-direct has made margins very small. Let's take a look at some real numbers.



The Sony ICF2010 flies a fictitious retail flag of \$459.95. When was the last time you saw one advertised for that? Typically, the radio sells for about \$340, netting the retailer about \$25. Some profit!

The same holds true for Uniden's Bearcat scanners. Uniden's imaginary \$449.95 suggested retail for the BC200XLT really makes the typical

\$260 selling price look pretty good. But it makes the retailer's \$29 profit look pretty dismal.

Near ports of entry like New York, retailers will pool their resources to make enormous volume purchases from off shore, allowing them reasonable profit in spite of substantial price slashing. These dealers may offer the greatest discounts, but don't offer customer support. That is the tradeoff.

Keep in mind, now, that the retailer has to invest in his order with no interest earned on that money while the stock sits unsold on his shelf. He must pay for shipping and insurance as well as advertising, salaries, building, utilities, taxes—get the picture?

So how about publishing? There must be tremendous profit in books—look at the piles of them in Waldenbooks stores and the lists in Publisher's Clearinghouse catalogs. The big publishers like Bantam and Signet may realize the coveted eight-times-cost profit, but many print runs still become clearance shelf candidates.

While the *World Radio TV Handbook* and *Passport to World Band Radio* may see 50,000 copies, more specialized tomes like the *Shortwave Directory* realize a volume only a tenth of that. Low volume printing eats up profit margins.

We at *Monitoring Times* are proud of the small American entrepreneur who advertises in our pages. It takes spunk, conviction and courage to risk the personal and professional security of a paying job and commit to an independent business. Only about 25% of these dreamers—and I use that term with respect and compassion—will last for three years.

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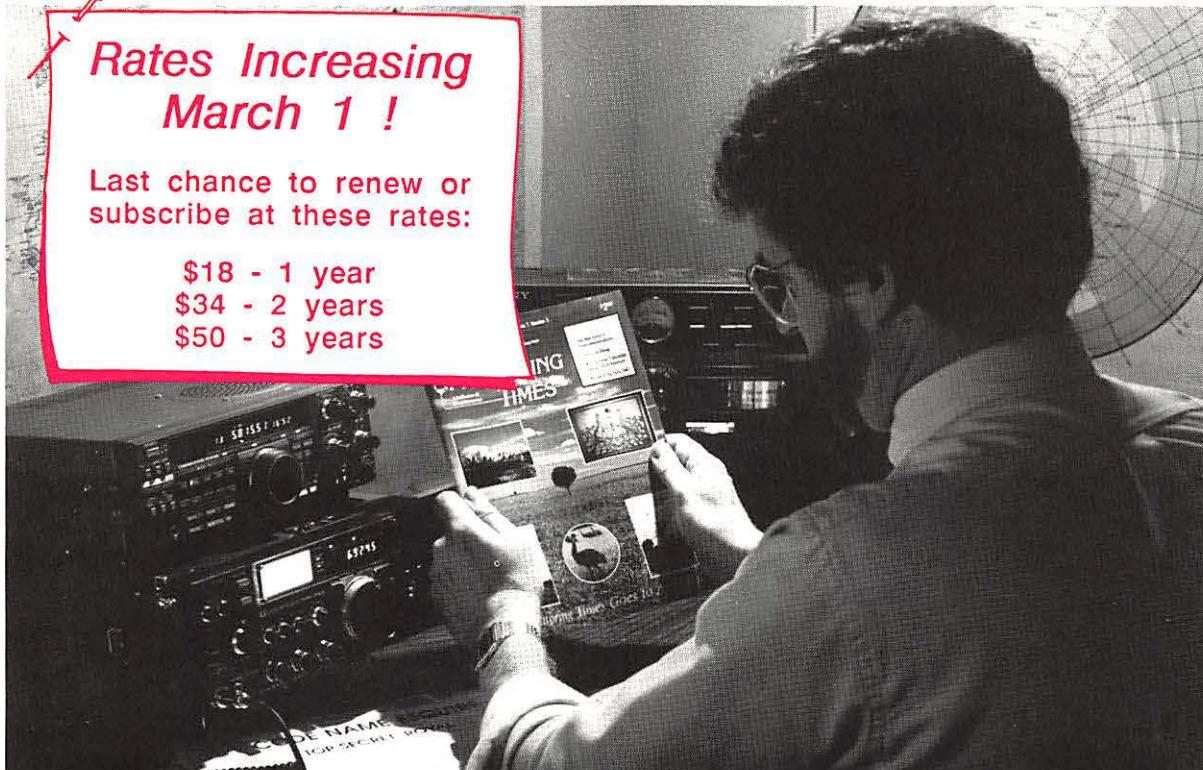
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